T. W. ALLEN

ABBREVIATIONS IN GREEK MANUSCRIPTS

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Notes on Abbreviations in Greek Manuscripts

BY

T. W. ALLEN

WITH

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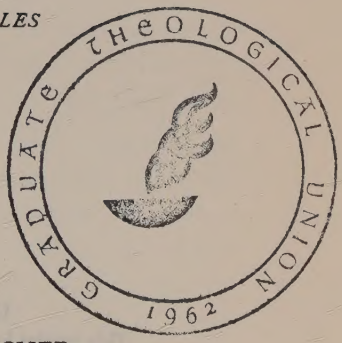

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TO

ALFRED GOODWIN

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NOTES

ON

ABBREVIATIONS IN GREEK MANUSCRIPTS.

A SENTENCE that occurs in the late Charles Graux' review of Lehmann's *Die tachygraphischen Abkürzungen* will explain the purpose of this pamphlet. He says, 'il est absolument indispensable que beaucoup d'observations exactes soient d'abord publiées avant que, à l'exemple du naturaliste qui dresse comparativement un tableau de la faune ou de la flore des divers régions du globe, les paléographes puissent un jour établir l'état des abréviations usitées dans le monde byzantin de siècle en siècle[1].' The science of Greek Palaeography, or at least that portion of it which deals with contractions, has reached a point at which what is necessary for its progress is not the production of all-inclusive handbooks with an immediate practical aim, where conclusions are laid down with all possible definiteness and width, but rather a series of observations of the actual usage of manuscripts, noted with all available accuracy by investigators whose occupations have given them familiarity with the ways of scribes and the possibilities of Greek writing. Such observations indeed must be classified and brought into relations with one another, and hypotheses may be suggested to explain the facts observed; but, as with any other yet undeveloped science, the first and main object must be the collection of fresh evidence. How little has been done towards such collection is known to anyone who has tried to find definite information upon the

[1] Revue Critique, 1880, Notices bibliographiques, etc., p. 168.

origin and history of any single Greek abbreviation. Comparatively little stress is laid on the subject of compendia in Montfaucon's great book, and Bast's well-known *Commentatio Palaeographica*, though stimulating in the highest degree, and the work of one whose palaeographical knowledge can seldom have been surpassed, has a directly practical intention, and moreover hardly recognises the principle of chronological development in the history of a compendium. The recognition and application of such principles to compendia forms the cardinal merit of Lehmann's handbook, a work that with all its industry and system is in point of actual palaeographical expertness far behind the *Commentatio Palaeographica*; both Graux and Vitelli have pointed out, with indisputable truth, the impossibility of deriving general conclusions in palaeography from the compilation of facsimiles. Professor Vitelli however has at length given us the first instalments of a treatise, that, independent of the actual value of its results, is a model in all respects of what such a work should be. The *Museo Italiano*, part I. pp. 9–15, 32; II. 168–173 contains a great number of his observations upon codices in the Laurentian and elsewhere. I shall be more than gratified if this pamphlet, which owes so much to the *Spicilegio Fiorentino*, be thought a not unworthy companion to it.

The bulk of the material presented here is taken from manuscripts in the Bodleian and the British Museum; but a tour in France and Italy in the early part of last year (1888), undertaken under the Craven Trust, has enabled a number of additional examples to be added to those already collected. In arranging the compendia in alphabetical order I have thought to consult the convenience of those looking for examples of any one in particular; at the end are collected some instances of tachygraphy which are grouped under the several manuscripts. I have endeavoured in discussing the various forms to avoid the faults urged against others; where hypotheses are ventured, it is as hypotheses that they are given, and with the

knowledge that a little increase in our information may overset them; I shall feel no particular shame if such a fate befalls one or two of my 'combinations': *caedimus inque vicem praebemus crura sagittis* is a line that every palaeographer should accept.

The plates have been produced by a photographic process at the University Press, and will, it is hoped, be thought more successful than previous reproductions of drawings.

I have finally the pleasant duty of thanking many librarians, at home and abroad, to whose kindness the possibility of making this collection has been due: to some of them my thanks have been already elsewhere given: here I gladly record my obligation to the Rev. Gio. Bollig at the Vatican, the Rev. Antonio Ceriani at the Ambrosiana, the Abate Anziani at the Laurenziana, Conte Soranzo at Venice, M. Henri Omont at Paris, Bodley's Librarian and Mr. Madan in Oxford, and lastly to the Principal Librarian of the British Museum, for constant encouragement and advice.

A. *Alpha*, it is well known, is properly represented by a horizontal stroke, improperly by a horizontal stroke dotted; the latter sign properly denotes τα, and in this sense is often found, though probably not so often as the dotted τ; this abuse of the two dots, most frequent in combination with τ, still occurs freely with other letters; lastly, there are many mss. which make use of the notation both in the original and in the illegitimate sense. I give examples of these four cases: (1) the simple horizontal stroke appears to be exclusively used in the scholia of the Arethas-mss.[1];

[1] By the 'Arethas-mss.' I mean the manuscripts which are known to have belonged to Arethas, deacon of Patrae, and afterwards archbishop of Caesarea, and which contain large quantities of scholia, apparently in the same hand: I here refer to five—the D'Orville Euclid (888), Clarke Plato (896), Lucian Harleian 5694 (undated), Aristotle Urbinas 35 (undated), Clement Paris grec 451 (914); cf. generally the *Observationes Palaeographicae* of E. Maass in the 'Mélanges Graux,' Paris, 1880, p. 749 sq., and Vitelli *Collezione Fiorentina* fasc. iv. pt. 1, where it is shewn that Laur. 60, 3 (Aristides) is in the hand of the Clarke Plato. A certain resemblance also, so far as the scholia are concerned, is to be seen in the mss. Mutin. 126 (Clement Alex.) and Vallicell. F. 10 (Canones eccl.).

of so large an extent of scholia it is impossible to speak certainly, but at least the tachygraphic dots, whether as τα or α, are very rare in these mss.: cf. σχῆμα εὐμάθεια from Lucian. The dots may be more certainly said not to appear in the Gospels Bodl. Auct. E. 5. 11 (s. X–XI), though the total amount of abbreviation here is comparatively small: cf. βασιλειαν παρα[1]. (2) mss. in which the dotted stroke occurs and is always τα, are Grotta Ferrata B. α. iii. (s. XII) παντα τὰ κατα, ὑποστάσεως, ματαιότητα; Epistles, Bodl. Auct. E. 5. 9. (s. X) κατα, ἀπαγορεύοντα, with βάσκανος, ἀντικαθισταμένων: Philo, Selden supr. 12 (s. X) ἔχοντα, ταῦτα. (3) The most frequent case is that in which a manuscript uses at one and the same time the dotted stroke and the dotted τ to express τα: such are the Paris Demosthenes[2] (Σ, grec 2934, s. X) συμπεράσματα, κατα, but προς τα; Clement Mutin. 126 (s. X) ἐνστάσεις, τα; Nonnus Add. mss. 18231 (a. 972) τὰ ἔταξεν τὰ; Vat. 1982[3] (s. X) τα ὁστᾶ; Iliad Venetus A ἔπειτα (schol.) θυμολέοντα (text); Psalter, Bodl. Auct. T. 4. 19 (s. X) ἔχοντα, τὰ; Aristides Vat. 1298 (s. X–XI)[4] ταυτα τάξις; Hermogenes Paris grec 1983 (s. XI–XII)[5] γραμματα, τα; S. Maximus Angelic. T. 1. 8 (s. XI) πάντα, ὄντα; S. Maximus Mutin. 12 (s. XII) νοηματα δοξαζοντα, τὰ πραγματα; Palladius Aed. Christ. 70 (a. 1104)[6] πειράζεται, μετά. Clarke 12 (Greg. Naz. s. X) combines the simple stroke for *alpha* with the dotted τ for τα, cf. κατα τάξιν, παραθαλασσιον. It is in anyone's power to extend this list. (4) The use of the double dots in combination with other consonants than τ is fairly common; it is most thoroughly carried out perhaps in the school of S. Nilo; cf. λαοῦ from B. α. xix (a. 965, hand

[1] A rather late instance of the simple stroke is *πολλάκις* from the ms. Turin B. 1. 22 (a. 1149). Cf. also *φιλαγάθου* from Galen H. 45 Arch. S. Petr. (s. XII-XIII).

[2] See the facsimile, Pal. Soc. 1886, 2nd series, pt. 3; the examples come from the scholia.

[3] See the description of this ms. infra p. 34.

[4] I am inclined to put this ms. earlier than M. de Nolhac (*Fulvio Orsini*, p. 171).

[5] Not X, as Bast.

[6] Not 1107 as the Catalogue.

of S. Nilo), βάρει σαββάτω, ἀλλὰ, παρὰ, ἁμαρτημάτων, φθαρτὴν from B. α. i (a. 986, hand of Paul), ἀποθάνει σπέρμα from Angel. B. 3. 11[1]: the use of the dots for the syllable αρ (already fully rendered by the compendium) in such words as μάρτυς, ἐπιθαρρήσεις from the London Nonnus, is a characteristic of the school; the *ring* in the compendium is turned indifferently up or down. Other mss. where the dots are thus freely combined with consonants are Nonnus Paris suppl. grec 469 A (a. 986) τὰ δέσμα; Vat. 1982 ἐνταυθα, παλαίσαντες βαθος; Vat. 1298 παραδειγματικῶς; and similarly the Hermogenes Par. grec 1983.

ΑΙ. The ordinary sign for the diphthong αι hardly needs fresh exemplification[2]; it is constant in the Arethas-scholia, and, among other tenth-century mss., in Clarke 12 and Mutin. 126. The *tachygraphic* form has not met me outside the Grotta Ferrata school (q. v.)[3]. A curious form occurs repeatedly in Barocc. 26 (Canons, &c., s. XI ineunt.); cf. ἐξαγοράζονται f. 209 r., πορεύονται f. 346 r., κατέχονται f. 347 r.: it is not unlike the sign which Vitelli (p. 12 n. 8) explains as a prolongation of the tachygraphic symbol; but I think it as likely that it may be merely the sign for ε used by itacism; cf. δήποτε from the same ms.

ΑΙΣ. Lehmann's remarks upon the comparatively late origin of the double apostrophe for αις are just; the Arethas-mss. use no single sign for the syllable, but render it by the sign for αι with sigma attached: so ὀρθαῖς, ταῖς from the D'Orv. Euclid. At the same time the sign must have been in existence by the beginning of the

[1] Lehmann well illustrates the use from Nonnus, Add. ms. 18231.

[2] The separation of the sign from its preceding consonant, which Prof. Vitelli (p. 172 n. 3) seems to think rare, is common in the Arethas-mss.: cf. *γεωμέτραις*, *πλευραί* D'Orv. Euclid, *φαίνεται* Plato, *σφαῖρα* Lucian; also *νύμφαι* Mutin. 126 (Clement), *κακοδαιμόνως* Vallicell. F. 10. The matter seems to be one of indifference.

[3] Since this was written I have seen it in Par. grec 990 and 3032 (q. v.).

tenth century, for the scholia to the Paris Plato, grec 1807 offer, as Bast was aware, both modes of rendering the syllable : cf. εὐωχίαις f. 7 r., ταῖς f. 99 r. The double apostrophe occurs in the ms. of Gregory Nazianzen's poems, Clarke 12, which I take to be of the earlier half of the tenth century ; cf. αἰσχραῖς, αὐταῖς : the earliest *dated* ms. in which the sign occurs appears to be the interesting Nonnus, Paris suppl. grec 469 A of A. D. 986, cf. ψυχαῖς 1. Vat. 1298 (X–XI) again, uses both modes, e.g. ταῖς, ψυχαῖς 2. The sign is uniformly absent from the Grotta Ferrata mss., which, where they give the syllable abbreviated, use the tachygraphic symbol. The *single* apostrophe, of which Vitelli gives some examples, p. 12, occurs in Clarke 12, f. 96 v. βαρείαις καὶ δειναῖς ὕβρεσιν, f. 201 v. ταῖς παρθένοις, Laud. gr. 39 (s. XI ineunt.), f. 83 v. ταῖς ἁμαρτίαις, Selden supr. 12[1], f. 10 r. ὁρμαῖς, 146 v. ταῖς αὐταῖς, 135 v. τοῖς οἰκέταις, f. 129 v. ἐν ταῖς τελειοτάταις; and Prof. Vitelli will forgive me if I add an instance from the beautiful Euclid Laur. 28, 3 (s. XI) δύο δὴ αἱ $\overline{\alpha\beta}$ $\overline{\beta\delta}$ δυσὶ ταῖς $\overline{\epsilon\delta}$ $\overline{\delta\beta}$ ἴσαι[2].

AN. The examples that I give of this commonest of compendiums are meant to illustrate the freedom with which it can be written on the line or attached to a preceding letter ; ἔδωκαν ὅτἂν from the Paris Plato, gr. 1807, ἐἀν, οὐκ ἀντέσχεν from Vat. 1982, οὖσαν from Selden supr. 12, παντὶ ὅταν from Roe 16 (Epistles, s. X exeunt.), πᾶν᾽ οὐκ ἄν, κἂν from Bodl. Misc. 251 (Epictetus, s. XII)[3]. Vitelli has noticed (p. 171) that this sign sometimes stands for the syllable αμ. I subjoin one or two instances of its use in this sense and also as representing αρ, viz. λαμβανόμεναι, D'Orv. Euclid, ἀναλαμβάνει, Harl. Lucian, ὑπολαμβάνω Vat.

[1] Philo, saec. xi Coxe, but the ms. may as probably belong to the century before, it is in bold minuscule above the line. F. 96 r., a late hand has expanded the symbol in question into *-αις*.

[2] Another example is *ἐν ταῖς αὐτῶν ἐπαρχίαις* from Vallicell. F. 47 (s. X).

[3] The same ms., a collation of part of which by Mr. Bywater will be found in Hermes, 1871, p. 362 sqq.

1298 (Aristid.), ἀναγκαῖον D'Orv. Euclid, ἀνάγκης Clarke Plato.

ΑΠΟ. A correct account is given in Lehmann of this preposition, though his examples may be greatly multiplied. The Arethas-mss., as is their general wont with prepositions[1], reject the symbol altogether, and abbreviate by superimposing π; the same is the rule with the Paris Plato. The Grotta Ferrata mss., including the London Nonnus, vary between this mode of abbreviation and a very decided type of the compendium, that may be taken as the purest form of it existing in minuscule: cf. ἀπὸ, from Nonnus, ἀπὸ τῆς, ἀπολογησάμενος, from Isidore (B. α. i), ἀποθάνει, ἀπὸ θαλάσσης from Angel. B. 3. 11. Precisely the same form is offered by Vat. 1982, ἀπὸ τῶν, ἀπολείψεσθαι. Forms more or less departing from this type are of very common occurrence: I give from the Paris Demosthenes 2934 (Σ) f. 235 r., ἀποβήσεται, 229 r. ἀπὸ τῆς, 217 r. ἀπολογίας; from the Bologna Euclid, Archiginnasio A. 1. 18, 19 (s. XI), ἀπὸ, ἀποτομή; from Bodl. Misc. 251 ἀποδεῖξαι[2]. Forms a step further removed are απεδειξεν, αποδυεσθαι from Clarke 12, απο του απο της from Laur. 28, 3, άπο from Barocc. 235 (Caten. in Psalm. s. X–XI), ἀπορόνοι from Laud. gr. 1 (Psalter, s. XI)[3]; in the last example the scribe was unaware of the proper force of the symbol, cf. the similar case quoted ap. Lehmann, p. 84. For the same sign in the sense of ὑπό, v. s. v.

ΑΡ. Since Prof. Vitelli has thought it worth while to collect evidence for the use of this compendium, some further instances may not be out of place. The form however cannot be called rare: the article in Lehmann is quite inadequate. The Arethas-mss. use the symbol very seldom; of those in England I have found it only in the Clarke Plato, f. 370 v. ἐπιχάρμου; of the Paris Clement and Urbinas

[1] So with *ἐπί*, *πρός* and *ὑπό*.

[2] So also *ἀποβλέπων* Par. 3032.

[3] Cf. also *ἀπὸ στέρησις* [sic] Par. 950, *ἀπὸ* Vat. 1316 (s. XIII).

35 I would not be so positive[1]. The Grotta Ferrata school on the other hand have the sign *passim*, with and without the superfluous dots, (v. under A), with the ring above or below, the stroke horizontal or slanting, in the middle or at the end of words: cf. βάρβαρον, παρέλλησιν from Nonnus, φάρμακον φθαρτὴν from Isidore, ἡμαρτηκόσι φρέαρ from Angel. B. 3. 11, ἀφθαρτὸν from G. F. B. α. iii (s. XII); the simple form occurs also in Vat. 1982, αμαρτίαν, αὐταρκως, that with the dots in Mutin. 12 (s. XII) σαρκὸς, καθαρθέντες. Other examples are ὄναρ, ἐξ ἄρρους from Mutin. 126 (s. X), ἀνάξαρχος, ηπαρ from Clarke 12, παρθένου from Bodl. Auct. E. 5. 11 (s. X), ἁμαρτολούς καρπὸν from Laud. gr. 1 (s. XI–XII), ὁ μάρκος from Vallicell. E. 40 (Caten. s. XI), αναμαρτήτους from Epictetus Bodl. Misc. 251 (s. XII), δέλεαρ, ὑπάρχειν from Neap. II. A a. 22 (s. XI–XII).

APA. Vitelli's remark that this compendium, though possibly rare on the whole, is frequent in mss. of a particular class, is illustrated by the examples that I have here to give. In the D'Orville Euclid it is naturally frequent, without accent as a rule in the text, whose scribe Stephanus very largely omits both accents and breathings; with accent and breathing in the scholia: cf. nos. 1, 2; it is found also in the scholia of the other Arethas-mss., e.g. no. 3 from the Clarke Plato, no. 4 from Urbinas 35: among mathematical mss. it occurs in the mathematical scholia to the Anthology (Paris suppl. grec 384, f. 639, &c., cf. no. 5), in Euclid Laur. 28, 3 (no. 6), both round and angular forms in Euclid Bologn. Archigin. A. 1. 18 (nos. 7, 8). The form is frequent in Bodl. Misc. 251, and in the sense of ἆρα, cf. no. 9. As a part of παρά, both shapes are found in the Paris Plato, grec 1807, e.g. ff. 7 r., 20 r. (nos. 10, 11). Vat. 191 (varia math., s. XV) has the sign occasionally, nos. 12, 13. I have not seen it in mss. of the Grotta Ferrata school[2].

[1] Ἁμαρτίαν Vallicell. F. 10.

[2] I may notice here that the Alpha with crossed downstroke which Belger, Hermes XVI. p. 278 (Frag. math. Bobiense f. 114. l. 30) imagines to be ἆρα is

ΑΣ. I give a few examples of this compendium used otherwise than at the end of words: ἀπαρουσιάστως Clarke Plato, χρήσασθαι Clarke 12, χαράσσοντες Nonnus Add. 18231, ἀσθενοῦντες ἀσθενείας εφασκεν Vat. 1982, διδάσκει ἠναγκασμένος Bodl. Auct. T. 4. 19, γαστριμαργους Roe 16 (s. X).

ΑΥ. Of this diphthong I can only produce instances from a few mss. more or less tachygraphical in character: viz. Vat. 1982 ἐνταυθα (bis) ταῦτα and *passim*, Grott. Ferr. B. α. iii. (s. XII) ταύτης, τοιαύτη ἑαυτὸν, and very often. The sign occurs most abundantly in the London Nonnus, but apparently only in the strictly tachygraphical portion [1].

ΑΥΤΟΣ. A ligature for this pronoun worth recording occurs in some of the Grotta Ferrata mss.; it consists of the α and υ run together with the case-ending added: cf. αὐτὸς αὐτοῖς αὐτήν ἑαυτῶν ὡσαύτως from Gr. Ferr. B. α. i. and Angel. B. 3. 11. A similar combination of α and υ occurs in αὐτοῦ from Aed. Christ. 70 (a. 1104), and the ligature is probably common.

ΓΑΡ. I give a selection of more noticeable forms assumed by γάρ. Nos. 1 and 2 are from the D'Orville Euclid and Harleian Lucian respectively, and this uncial form is usual in the Arethas-scholia: no. 3 is from the text of the D'Orv. Euclid. Forms with the uncial Gamma are 4 from Genuens. 7 [2] (a. 1057), 5 from Barocc. 196 (a. 1042), 6 from Mutin. 230 (a. 1051), 7 from Aed. Christ. 70 (a. 1104), 8 from Bodl. Auct. T. 4. 19 (s. X): of minuscule forms, 9 is from Laur. 32, 15 (Iliad D s. X), 10 from Vat. 1982 (s. XI), 11 from Grott. Ferr. B. α. i (a. 986), 12 from Angel. B. 3. 11, 13 from the Paris Demosthenes Σ (from the text), 14, 15 from Vat. 1298 (Aristides, s. X–XI), 16 from Vallicell. E. 40 (s. XI), 17 from Bodl. Roe 16, 18 from Bodl. Auct. E. 5. 9

in reality *ἔσται*. I hope to call attention elsewhere to the mis-deciphering of this ms.

[1] Examples from Par. grec 990 will be found in the account of that ms., p. 37.

[2] Biblioteca della Congregazione di san Carlo.

(s. X), 19, 20 from Laud. 89 (s. XI), 21 from Roe 1 (s. XI–XII)[1], 22 from Turin B. 1. 22 (a. 1149). The abbreviation for ρα, which seems one of the peculiarities of the Grotta Ferrata school, may be illustrated by ράφειν from Isidore (a. 986), θεῖα ραφὴ from Angel. B. 3. 11. It may be doubted whether sufficiently precise evidence as yet exists to prove Lehmann's conclusions (p. 92), as to the origin and relation of the two modes of representing the syllables αρ and ερ.

ΓΙΝΕΤΑΙ. The simple contraction for γίνεται acquires some interest from the varying forms under which it appears. It is most common perhaps in mathematical mss. Cf. 1, 2 from the D'Orville Euclid (text), 3 from mathematical scholia to the Paris Anthology, 4 from the Paris Demosthenes Σ, 5, 6, 7 from Laur. 5, 3 (Clem. Alex. s. X).

ΔΕ. The ordinary usage for the particle δέ probably needs no illustration; I may however add one or two examples to that given by Prof. Vitelli (p. 169) of the syllable δε at the beginning or in the middle of a word; viz. εἰδέας from the British Museum Nonnus, δέχεται δεδωκώς δέκα from Vat. 1982. Rather unusual ligatures are nos. 1, 2 from Roe 16.

Ε. Lehmann's article on ε is thorough and practically sufficient. The waved line which in minuscule represents both αι and ε is universal in the verbal endings -μενος and -μεθα, and in other combinations of the syllable με (e. g. μένει from the London Nonnus). But the abbreviation of ε attached to other consonants is comparatively rare, and I can only cite examples from Laud. 37 (s. XII): τελεῖν τελετ᾽ν κεφαλη σεμελην. The spelling of the ms. is itacistic (cf. σημαίνωντες s. ες), and this particular usage may possibly be so explained[2].

[1] This form perhaps is analogous to those examples of ερ given from Laur. 72, 5 by Vitelli, p. 15.

[2] The same sign in Laud. 37 represents η; v. κεφαλη above, σιωπῇ δημητρας. Cf. also ἐνεργήσασαν τιμωρηθήσονται from a ms. of New College, Oxford (No. 59, s. xii), τὴν from Vat. 587 (Cyril, s. XII) δ᾽ ἠμείβετο Laur. 32, 15 (man. 2, s. XII–XIII). It may be doubted whether this mode of abbreviation is found

ΕΙΝ, ΗΝ, ΙΝ. The proposition that the three syllables ηv, ειv, and ιv had originally a common sign, and that at a later period they were differentiated by the doubling of the sign, for ειv, the adding of diacritic points, for ιv, the original sign being appropriated to ηv, is correctly stated by Lehmann, p. 55. At what time and under what circumstances these steps took place cannot at present be determined; the statistics here presented may advance the question somewhat[1]. Manuscripts in which ηv, ειv, ιv are represented by the single sign are: the five Arethas-mss., Euclid (a. 888), Plato (896), Lucian, Aristotle Urbin. 35, Clement (914); Clarke 12, Bodl. Auct. T. 4. 19, Laur. 28, 3, Angelica B. 1. 7 (Caten. in Matth. s. X), Vat. 1298, Vallicell. C. 41 (Caten. in Iob. s. X), Grott. Ferr. B. α. iii. (s. XII). The following two differentiate ειv, but have a common sign for ηv and ιv: Angel. B. 1. 5 (Caten. in Evang. s. XI); Angel. C. 4. 14 (Liban. epp., s. X–XI); the following four have a common sign for ηv and ιv, while ειv is *apparently* always written in full: Iliad Ven. A, Bodl. Canon. 110 (s. X ineunt.), Grott. Ferr. B. α. i (986), ib. B. α. iv (992)[2]. A late example of the use of the original sign for ειv is Bodl. Auct. E. 2. 4 (1106), φέρειv. On the other side, the earliest dated ms. that I know of where the duplicated sign is used for ειv is the Nonnus Paris suppl. grec 469 A (a. 986)[3]; cf. ἀποστάζειv πίνειv; another ms., undated but

before the twelfth century. A very remarkable usage occurs on a page of tenth-century minuscule bound up with the ms. Vallicell. F. 10. It is illustrated in the words *περι αμαρτηματων και κληρικων*, and consists in the ordinary tachygraphical sign for *η*. I do not know an exact parallel.

[1] Prof. Vitelli thinks (p. 10, n. 3) that Lehmann's observations upon the mode of forming the compendium for *ειv* at different periods—whether the strokes were drawn up or drawn down—need modification. I have not paid attention to the point. I may here say once and for all, that Lehmann's statements of, and *a fortiori* inferences from, the usage of Nonnus, Brit. Mus. Add. mss. 18231, whether in regard of tachygraphy or the ordinary system of abbreviation, are entirely erroneous. A correct account of the ms. is given on p. 33 sq.

[2] The two Grotta Ferrata mss., where they abbreviate *ειv*, use the proper tachygraphical symbol; for *ιv* they use both modes of abbreviation.

[3] The abbreviations of this ms. are strictly limited in number, but those that are used recur constantly. I did not find instances of *ιv*, *ειs*, *ιs*.

certainly not late in the tenth century, Bodl. Auct. E. 5. 9, has the later usage throughout for the syllables ειν, ιν, εις; cf. διαφέρειν, ἔλθωσιν, ὑμεῖς. Later dated examples are Mutin. 230[1] (a. 1051), ῥηθεῖσιν; Genuens. 7 (1057), κοσμεῖν ἐστίν; Genuens. 2 (1075), ἀτενίζειν; Aed. Christ. 70 (1104), σπεύδειν. From these instances it is plain that no more particular conclusion can be drawn than that the old system lasted long, and the new system began early; but *perhaps* it may be said (1) that the abbreviation of ιν was, relatively to ην and ειν, rare (a similar remark is made by Lehmann, p. 67), and (2) that the differentiation of ειν from ην began earlier than that of ιν from ην.

ΕΙΣ, ΗΣ, ΙΣ. Vitelli's observation (p. 169, n. 2) that the double sigma in the sense of εις was in use in the first half of the tenth century is more than confirmed by the Clarke Plato, where in the scholia that come from the hand of Arethas the word ἐνστάσεις occurs with the final syllable thus represented; in the rest of the ms. however the single sigma seems always to be found. Manuscripts in which ς stands for all three syllables are the Clarke Plato, Clarke 12, and Clement Mutin. 126: it stands for ης and ις in the D'Orv. Euclid, Harl. Lucian, Vat. 1982, Iliad Ven. A, and doubtless in many other tenth-century mss.; the last four mss. appear to write the syllable εις in full[2], and I think Lehmann's remark (p. 57) well-founded, that the abbreviation is, in early mss., *comparatively* rare; neither εις nor ις is abbreviated (as it would seem) in Nonnus Par. suppl. grec 469 A (986). The Grotta Ferrata school use as a rule the proper tachygraphic sign for εις, but the single sigma occurs occasionally, e. g. ἐκθρέψεις from Nonnus; the syllable ις in these mss. is usually written in full. Early examples of the ordinary double sigma are φωκεις Demosth. Par. Σ, ἡμεῖς Euclid Laur. 28, 3 (s. X–XI); two dated instances are δυνάμεις from Mutin. 230 (a. 1051), πανηγύρεις from Bodl. Auct. T. ii. 2 (a. 1066). Lastly, the

[1] My notes do not give an instance from this ms. of *ειν* abbreviated.

[2] I now find an example in Vat. 1982 of ς for *εις*: f. 218 v. *θησαυρίζεις σεαυτῷ.*

syllable is often enough abbreviated in the middle of a word; cf. κεκλεισμέναι κινεῖσθαι from Clarke 12. Prof. Vitelli (12 n. 1, 172 n. 2) challenges the explanation of a ligature for εις, of which he gives examples; I have found the form in Clarke 12, εἰς τὰ, Laud. gr. 1, εἰς τὸν, εἰς τοὺς, εἰς τὴν, Mutin. 12 (s. XII) μῖσος εἰς τὸν, Bodl. Misc. 251 (s. XII) εἰς τὸν (bis), D'Orv. x. 1. 1, 2 (Etym. Magn. s. XIV) εἰς τὰ, and it is evidently the sign found by Ludwich in the Hamburg ms. of Odyssey-scholia (*Aristarchs Hom. Textkritik*, ii. 698)[1]. In one instance, Clarke 12 f. 189 r. εἰσίν (no. 1), the ligature occurs not in combination with the article, and with the sigma expressed; and this I think gives some ground for explaining the form itself as the ordinary ligature for ει *plus* a cross-stroke to denote abbreviation; so the scribe who used it for εἰσὶν would have been conscious that the sigma was strictly speaking unrepresented in the compendium. To turn to ις, the later sign with the diacritic dots occurs in Mutin. 230 (a. 1051) συνέλευσις, Bodl. Auct. T. ii. 2 (a. 1066) κρίσις, Genuens. 2. (a. 1075) ανάρνωσις; but it already appears in a far earlier ms., Bodl. Auct. E. 5. 9, certainly of the tenth century, e.g. τις, μόρφωσις. The syllable, as observed above, is in the Grotta Ferrata mss. mostly written in full, and where contracted represented by the strict tachygraphic symbol. An itacistic usage of the double ˢˢ for ις, of the sort noticed by Vitelli, p. 11 n. 1, occurs in Laud. gr. 1 λογισμοί, though that this is an exception is shown by βαπτίσματος from the same ms. The sign occurs freely in the middle of words; cf. κράτιστε from Clarke 12, καθώπλιστο Iliad Ven. A (scholia). The ordinary sign for ης hardly needs confirmation. The itacistic ˢˢ occurs in Laud. gr. 1 already adduced; cf. ἐπὶ γῆς, ἀπὸ στῆς, and a marginal gloss where both usages occur together, καλυπτούσης φραττούσης[2]. The

[1] Cf. also *εις τους αιωνας*, Vat. 1982, *εἰς τ[ους αἰῶνας]* Vat. 2 (s. XI), *εἰς τοῦτο* Vat. 1456 (s. XI), *εἰς τὴν* Grott. Ferr. Z. a. xxv. (schol. min. in Iliad. s. XI). The form is in fact fairly common.

[2] Cf. Martin, *Les scolies du manuscrit d'Aristophane à Ravenne*, p. xvii.

use of the compendium in the middle of a word is illustrated by θνήσκουσι from Clarke 12.

EINAI. To the various forms of the sign for εἶναι given by Lehmann and Vitelli I add the following: nos. 1, 2 from Plato Paris 1807, which are apparently a near approach to the original form[1], 3 a similar form from Vat. 1298 (Aristides, X–XI); the shape the sign assumes in the Arethas-mss. is shewn by 4 from Euclid, 5 from Plato, 6, 7 from Lucian; Demosthenes Σ and the Anthol. Pal. (Paris portion) offer 8 and 9, without accent or breathing, Vat. 1982 no. 10; here and in 11 from the London Nonnus, occurs the stroke for abbreviation. The horizontal type occurs in Clarke 12, no. 12 *passim*, Laur. 28, 3 no. 13, Grott. Ferr. B. α. iv. (a. 992) no. 14, Angelica T. 1. 8 (s. XI) no. 15, Vat. 1298 no. 16, Hermog. Paris grec 1983 (s. XI–XII) no. 17, Bodl. Misc. 251 no. 18 *passim*.

EN. The form which this syllable takes in the Arethas-mss. is illustrated by μέντοι, ἔοικεν, εἰώθαμεν from the Harl. Lucian, ἐν from Plato f. 395 v. For other tenth-century mss., cf. βουληθέντα Clarke 12, πενθέρας Auct. E. 5. 11, ἐν ἔνθεν Nonnus Add. 18231; cf. also ἐν ἐντολὰς from Barocc. 235 (s. XII), and the odd ligature οὐδὲν Mutin. 230 (a. 1051). It will be observed that these forms are either right angles or slight departures therefrom. The variation in which the downstroke is prolonged occurs in Vat. 1982 ἐν, ἔλεγεν (Vitelli, p. 9 n. 2). The strictly tachygraphical sign is by no means rare, and is found in mss. that are not otherwise particularly tachygraphic: cf. e. g. σώζομεν Auct. E. 5. 11 (s. X–XI) σωθήειμεν [sic], μὲν, ὅθεν Roe 16; further μὲν (bis) ἐν (bis) ὑπομνήσομεν Nonnus Add. 18231, ὁμιλοῦμεν Grott. Ferr. B. α. iv. (992), μὲν λέγομεν κατεχόμενοι Vat. 1982[2].

[1] In explaining the genesis of the original form it is difficult to accept either Lehmann's view that the two dots come by false analogy from the sign for ἐστί, or that of Graux (Rev. Crit. 1878, Notices Bibliographiques, etc. p. 66) by which they are due to the desire for symmetry.

[2] And εἶχεν, Angel. B. 3. 11, second hand.

ΕΡ. Of both the methods of representing ερ there are abundant examples in older minuscule. The more common perhaps is that consisting of a stroke, inclined to the left, but above or below the line, with a ring attached; this is to be found in the scholia of the D'Orv. Euclid (ὅπερ 1, ἥπερ), the Clarke Plato (ὅπερ 2), Plato Paris 1807 (ὑπέρ bis), Laur. 28, 3 (ὅπερ 3), Clarke 12 (ὑπερβολήν), Mutin. 126 (ὑπὲρ 3, ὅπερ 4), Vat. 1298 (ὑπέρ 4), Mutin. 193, Lucian s. XI–XII. (εἴπερ), Mutin. 12, s. XII. (ὥσπερ, ἅπερ), and throughout in the Grotta Ferrata school, e. g. συνεργοί Nonnus, σπέρμα G. F. B. α. i., δερματίνους Angel. B. 3. 11, ὑπὲρ φύσιν G. F. B. α. iv., ὅπερ ὥσπερ ib. B. α. iii. The second mode, the simple cross-stroke, of whatever origin, may be seen in the text of the D'Orv. Euclid (ἅπερ), often in the scholia to the Clarke Plato (ὥσπερ ὅπερ ὑπέρ), in those to Demosthenes Σ (ὥσπερ 2, ὅπερ 2), and it occurred in the now lost 'codex Vallae' of Archimedes[1]. I have suggested under ραρ a parallel to the form quoted by Vitelli, p. 15.

ΕΣ. The normal use of the sign for ες (e. g. as in νικῶντες from the Harl. Lucian) is well established; it is less common to find it either in the middle of a word or upon the line. Of the former case γενέσθαι ἀρέσκειν from Clarke 12, ἔξεστιν from Auct. E. 5. 11 are examples; for the latter one may compare μάξαντες Plato Par. 1807, λέοντες Mutin. 126, δεσπόται Angel. B. 3. 11, συνείραντες G. F. B. α. i., ἐνίζοντες ib. B. α. iv., ἐστιν ib. B. α. iii., φθάσαντες ἀπολείψεσθαι Vat. 1982. The itacism by which the double apostrophe, ordinary representative of αις, is employed for ες, of which Vitelli gives some instances, p. 12, is more widely spread than is commonly supposed, and occurs in mss. of a good age and often otherwise carefully written; such are the well-known Laur. D of the Iliad (32, 15) μένοντες, Angel. C. 4. 14 (Liban. epp. s. X–XI) δοκοῦντες ἀναλώσαντες, Bodl.

[1] As we are told by the writer of the Angelica C. 2. 6, who gives a table of the abbreviations used in his archetype: I take thence περ and the explanation. Cf. Heiberg, Philologus 42, p. 421 sq., and my own notes on the Biblioteca Angelica, forthcoming in the *Classical Review*.

Auct. T. 4. 19 (s. X exeunt.) δεδωκότες *passim*, Laud. gr. 1 δαίμονες πάντες, Laud. gr. 37 (s. XII) σημαίνωντες καλοῦντες, Laud. gr. 89 (s. XI) ἅπαντες, Barocc. 235 (s. XI) ἰδόντες, Bibl. Corsini 41 G. 16 (Evang. s. XII) βλέποντες δαιμονῶντες, Vallicell. E. 29 (s. X) ἑκτετηκότες.

ΕΣΤΑΙ. One of the most interesting of Greek compendia, and that may almost be said to have been discovered since the appearance of Lehmann's handbook, is the sign that represents ἔσται—almost technical in geometrical mss., but occurring with a certain frequency in mss. of other subjects. The sign was originally found by Bast in the ms. S. Germ. 249 (Comm. Pal., p. 810), and this is the only instance that Lehmann has before him; Prof. Vitelli (p. 168) has found it in the Laur. Aeschylus, the Aristotle Paris grec 1853, and the Euclid Laur. 28. 3. The oldest instance that I am able to give of it is the Fragmentum mathematicum Bobiense, f. 114 v. 30 in Belger's copy, Hermes XVI, where Belger misreads it ἄρα[1]. Next it is used in most of the Arethas-mss.; the Bologna Euclid Archiginnasio A. 1. 18[2] has it, and doubtless most other mathematical mss. before the twelfth century; lastly, it is one of the many compendia used by the scribe of the Bodleian Epictetus Misc. 251 (s. XII). Hence we get the following chain: 1 Frag. Bobiense, 2–4 D'Orv. Euclid (text), 5 ib. (scholia), 6 Plato, 7 Lucian, 8 Urbin. Aristotle, 9–12 forms from Laur. 28, 3 rather different to the one given by Vitelli, 13–16 from the Bologna Euclid, 17–20 from the Bodl. Epictetus. I enclose in brackets Prof. Vitelli's no. 53 for greater completeness. On comparing these forms with those given by Bast and Vitelli, it appears (1) that the dots signifying τ are absent and present indifferently in mss. of the same age; (2) that, with this qualification, the original form is best represented by the type given by the Bobbio fragment and the text

[1] I have to defer the proof of this statement, but its truth will be evident to anyone who tries to read the passage grammatically.

[2] Heiberg's b, saec. xi.

of the D'Orville Euclid, and that the letters contained in the sign are therefore (τ) + α + the tachygraphic ι either attached to or crossing the downstroke of α[1]. (3) The late forms 17–20 are direct descendants of no. 1; the transition from one type to the other will be plain if we imagine such a form as Vitelli's no. 53 written with the curve open instead of closed. His no. 39 I should be inclined to explain as due to carelessness on the part of the scribe, but in any case it does not disturb the general result[2].

I. The curious expedient of representing, in late manuscripts, iota by two dots on a level with each other, is well known, but not so universal that it may not be worth while illustrating from four dated mss.; viz. κομματικόν from Coll. Nov. 258 (a. 1298 written by Demetrius Triclinius) where the usage is frequent, μνήσθητι from a note in Roe 1 that bears the date 1417, γεωργίω from Mutinensis 118 (a. 14?8)[3], and κοντελέοντι from Vat. Ottobon. 58 (a. 1538).

INA. A simple contraction for ἵνα, consisting of an iota with a mark of abbreviation beneath it, occurs in three mss. of my observation: Angel. T. 1. 8 (s. XI), Vallicell. E. 40 (s. XI), and the Bodleian Epictetus, Misc. 251 (s. XII). The form is practically the same in all three[4].

K. The article in Lehmann shows well how the waved line, descendant of the original tachygraphic κ, represents final

[1] Lehmann's analysis (p. 104) comes near to this, though in the single form given by Bast it was impossible to perceive the direct presence of the *a*. (Since the article on *ἔσται* was written, I have found instances of both the plain and the dotted form in the Aristotle Ven. 201 of A.D. 955. In either case the form was *open*, and the example is important as an indication of the age at which this tendency manifested itself.)

[2] To Lehmann's account of *ἐστί* little exception is to be taken; I doubt however his statement (p. 102) that the horizontal line over ·/· in Vat. 1809 denotes *ν*—surely it is the general sign of omission. Curious representations of the word are no. 1 from G. F. B. *a.* iii, no. 2 from Laud. gr. 1 (s. XII).

[3] On the date I must refer to my notes on the Estense in the *Classical Review* for February, 1889.

[4] It is to be seen also in Vallicell. E. 63 (s. XII), a ms. in a hand not unlike that of the Bodleian Epictetus, and is probably common.

syllables beginning with κ, chiefly but not exclusively terminations in -κός, etc. The usage is very constant in mss. that I have seen: cf. ἰατρική, ἀριθμητική, ἐπιθυμητικῷ Plato Clarke 39, ἰαμβικός Clarke 12, πολιτικόν Auct. E. 5. 9, θεωρητικοῦ Nonnus Add. 18231. Nonnus however usually exhibits the case-termination, e.g. ἐκκλησιαστικῆς, ἀπελαστικήν, οὐκ ἐπιδεικτικῶς; so also μερικήν Auct. E. 5. 9[1]. Instances of terminations other than -κός are γάλακτος Clarke Plato, μικρόν Auct. E. 5. 9, εἴρηκεν, ἐγίνωσκον, κακά Laud. gr. 1, μακρόν Laur. 32. 15 (Iliad D), ἑβδομηκοντάκις Demosth. Paris Σ[2].

ΚΑΤΑ. Neither Lehmann nor Prof. Vitelli (p. 15) has given much illustration of the modes of representing κατά. One may distinguish (1) partial abbreviation, where (*a*) the κ is tachygraphically rendered; so κατά 1 καταχρώσας often in the London Nonnus, κατά 2 κατεκάει (*sic*) Clarke 12, κατά 3 and 4 Laur. 28, 3, κατά 5 Vat. 1298[3], or (*b*) the abbreviation is confined to the other letters. A few examples will suffice to illustrate this; cf. κατά 9 καταδιώκειν Bodl. Auct. E. 5. 9, κατά 10 Demosthenes Σ, κατά 11, 12 Vat. 1298, κατατήν Angel. T. 1. 8 (s. XI), where the pair of dots appear to do double duty. (2) Complete abbreviation, the proper tachygraphical sign; e.g. καταδυομένη Clarke 12, καταφθείρει Vat. 1982. The sign is universal in the more tachygraphical parts of Nonnus, but does not occur in as much of the ms. as is written in minuscule[4].

Λ. Lehmann's account of the origin and usage of the contraction[5] for syllables beginning with Lambda is deservedly commended by Graux, Rev. Crit. 1880, Notices Bibliographiques, etc., p. 165. His examples however admit

[1] Rather individual forms of the κ with case-termination are *ἀποστολικῆς*, *ἐγκληματικῷ*, *ἐπισκόπων* from Vallicell. F. 47 (s. X).

[2] Prof. Vitelli (p. 172) considers the waved line in the sense of the *syllable* *και* a rarity. I have found it in at least four mss.; Roe 16 *δικαιοσύνη*, Auct. E. 5. 11 *καισαρεία*, Laud gr. 39 *καιρόν*, *καίσαρος*, *νικαία*.

[3] *κατὰ* 6 Vat. 587 (s. XII), *κατὰ* 7 and 8 Vat. 1316 (s. XIII).

[4] Cf. also *καταλαμβάνω* Par. 990. How uncertain the use of the symbol is appears from *κατέλαβεν* from the same ms.

[5] I. e. a superimposed Lambda that afterwards assumes various shapes.

largely of multiplication. The use occurs, though rarely, in the Arethas-mss., e.g. σκαληνόν, ἰσοσκελές Plato, πόλις Lucian; other tenth-century examples are παῦλος, πόλις, σύμβολον Clarke 12, κεφάλαιον ἄμπελον Demosth. Σ, σχολήν, βασίλειον Nonnus Paris suppl. grec 469 A, παραβολήν Iliad Ven. A; in all of these instances it will be noticed how the right stroke of the Λ is prolonged. Freer examples from the same century are ἐπιστολήν Auct. E. 5. 9 (but ὁ ἀπόστολος ib.) τέλος, παῦλος, βασιλεύς Auct. E. 5. 11. The Grotta Ferrata school use the contraction not unfrequently: so κύκλος, ἐπιστολῆς, κωνσταντινοπόλεως Nonnus, ἀπόστολοι G. F. B. α. i. Lastly, a few eleventh-century mss. may be cited: Laud. gr. 39, Selden supr. 11, Laud. gr. 1 (the eccentric form τοῦ διαβόλου). I add a somewhat more interesting example, θεολόγου, from Phot. Bibl. Ven. 450 (s. X)[1].

ΜΕΝ. The Bodleian ms. of the poems of Gregory Nazianzen, Clarke 12 saec. X[2], so often already cited, has not unfrequently the tachygraphical symbol for μεν, whether the particle or a syllable in a word; so μέν f. 157 v., μενοῦν ib. *et saep.*, ἐθηράσαμεν 176 v.[3] For other tachygraphical usages of this ms. v. under κατά and τε[4].

ΟΜΟΥ. One of the most curious signs that still remain for the palaeographer to analyse is that occurring in some manuscripts for ὁμοῦ. Lehmann s. v. has collected the quotations of it by earlier enquirers and Gitlbauer (Vat. 1809). Vitelli does not notice it. The form occurs in mss. by no means tachygraphic, and even where the percentage

[1] It may be worth noticing that the simple contraction for λόγος and its compounds is freely used in the Arethas-mss. I give as types ὁ λόγος, λόγον, λόγους, ἄλογον, εὔλογος, καινόλογος, from the Harl. Lucian. Further cf. λόγος 2, λόγον 2, ἀλόγως from Grott. Ferr. B. α. i.

[2] Both Graux, *Revue Critique* 1878, p. 124, and Vitelli, l. c. p. 161, n. 2 have demanded information upon the stichometry of this ms. It may be well therefore to say here briefly, that the number of στίχοι is in this case precisely the number of verses in the poems.

[3] See also *infra* under Par. grec 990, p. 38 (for the syllable με).

[4] A contraction for μεταξύ which I cannot satisfactorily explain occurs in the Clarke Plato f. 377 v., Harl. Lucian f. 73 v.; cf. the instance in the table. Otherwise (Frag. Bobiense, D'Orv. Euclid) μεταξύ is represented by $\overline{\text{μ}}$.

of 'ordinary' abbreviation is not great; it is most common perhaps in mathematical mss., but it occurs in others also where it is necessary to add up a total. It consists of two parallel strokes crossed by a single one, and may either have the rough breathing and circumflex or be without either; and in late mss. the accent and breathing are run together into a single waved line (so Lehmann rightly analyses it). In Vat. 1809 the single stroke is vertical, and the two crossing it horizontal[1], but later the form is that given in the table: viz. no. 1 Bologn. Archigin. A. 1. 18 (Euclid, s. XI), 2 Mutin. 71 (Synaxarium, s. XI–XII), 3 Vat. 191 (circ. 1404, var. mathemat.), 4 Mutin. 55 (Synesius, etc. s. XV). A curious form, distortion or misapprehension, is no. 5 from Laud. gr. 39 (s. XI ineunt.) τέλος κανόνων τῶν ἐν νικαίᾳ· ὁμοῦ κ̄[2].

ON. Two additions may be made to the otherwise very full article of Lehmann's upon ον. (1) The illegitimate use of the *double* stroke in the sense of the single (Lehm. p. 73) occurs as early as Laud. gr. 1[3], e. g. φυλάττοντας, μόνον, ἄρχοντες. (2) The single stroke is not so seldom met with in the middle of words as Lehmann's examples suggest; it is common in the Arethas-mss.: cf. ἀγαγόντες from Euclid, παίζοντες Plato, ἔκοντες Lucian[4].

ΟΣ. To the examples given by Prof. Vitelli (p. 11, n. 4) of the tachygraphical sign for ος in ordinary mss. I add some instances from Barocc. 26 (s. XI ineunt.), a ms. that offers some other peculiarities of contraction[5]; viz. ἀπόστολος f. 249 r., ἐνεργοῦντος 338 v., πρός 198 v., ὁ αὐτὸς τοίνυν λόγος 182 r.[6]

[1] An identical form appears to be presented in the Frag. Bobiense, f. 114 v. 26, ap. Belger Hermes XVI, but it must be admitted that certainty as to its meaning is difficult. Other instances of the compendium are no. 6 from Par. 990, no. 7 from Vat. 904 (s. XIII), no. 8 from Vat. 1319 (s. XV).

[2] *ὁμοίως*, from Laur. 28, 3 is to be compared with the sign given by Vitelli for *ὅμοιον* (p. 172, n. 1, plate no. 73).

[3] 'Saec. XI ineuntis,' Coxe; but it may be as much as a century later.

[4] More remarkable examples are *ὄντως* Par. 990, *λέγοντες* Par. 3032; cf. also *φίλιππον, τὸν* from the latter ms.

[5] V. s. *αι, ους*.

[6] Another instance is *πλῆθος* from Par. 3032. V. also s. τος.

Another mode of expressing oc, little noticed hitherto, is by an uncial sigma, cf. from Laud. gr. 39 ἕκαστος, πρός, περὶ τοῦ παρατεθέντος and σχισματικῶν; further λόγος καταφατικός Nonnus add. 18231, πρὸς ὕψος Grott. Ferr. B. α. iv. (a. 992), ἵκτερος Bodl. Auct. T. 1. 2 (s. XI ineunt.). These examples may go some way toward resolving Lehmann's doubt (p. 75) about the meaning of the sigma in the two words that he quotes from Sabas[1].

OYN. Illustration of this common compendium, whether as the particle or the syllable, is hardly needful. I take almost at random καλοῦνται, οπως οὖν from the D'Orv. Euclid, οὖν 1 from the Clarke Plato, οὖν 2 from Par. grec suppl. 469 A, and the unusual ligature βεβαιοῦντος, οὖν from Barocc. 21 (s. XII). Of the *genesis* of the symbol I do not remember to have met with any account; Lehmann (p. 76) leaves the question open. If however we compare this ordinary sign for ουν with the tachygraphic symbol for εν (v. supra), it is plain that they have one part in common, namely the crooked stroke that concludes either compendium: this stroke therefore, in either case, may be taken to represent ν, and while the open curve in εν will stand for ε, that which is closed in ουν may similarly be inferred to represent ο[2].

OYΣ. Of the ordinary form of the compendium for this syllable illustration is needless; somewhat remarkable forms however are ἄλλους Par. suppl. grec 469 A (Nonnus a. 986), τοὺς τόπους Vallicell. C. 41 (s. X); a combination frequent in Grott. Ferr. B. α. iv. (a. 992) is perhaps worth recording, πνευματικούς. The double waved line (Vitelli pp. 9, n. 2, 169) occurs in Roe 16 (s. X) τούτους τοὺς πιστεύοντας, Laud. gr. 39 τοὺς χρόνους, Theophrastus Urbinas 61 (s. X) τοὺς

[1] I give a few examples of the sign for ὅτι; no. 1, from Clarke 12 f. 180 v., resembles the primitive form as given in Vat. 1809, no. 2, from the Paris Greek Anthology, is an instance of the omission of the dots; cf. also nos. 3, 4 from Par. 3032, no. 5 from Vallicell. C. 61 (s. XV).

[2] Compare ουν as represented in Vat. 1809, e.g. συνεστῶτος, f. 195 r. B. v. 22.

τόπους[1]; the single waved line (the proper tachygraphic sign) in Barocc. 26, ἐλευθερουμένους, αὐτοὺς χριστιανούς[2].

ΟΥΤΟΣ, etc. To Vitelli's examples (p. 11, n. 3) of οὗτος, οὕτως, etc., I may add a few others. The abbreviation is almost a feature of the Arethas-mss., cf. 1 οὕτω Euclid (text), 2 οὕτως ib. (scholia), 3, 4, 5 οὗτος, οὗτοι, οὕτως Lucian; further 6 οὕτως Vat. 1982, 7 οὕτως Vat. 1298, 8 οὕτως Mutin. 193 (Lucian, s. XI–XII).

ΠΑΡΑ. The word παρά may be compendiously expressed (1) by π + the sign for ἄρα, (2) π with the topstroke crossed by a slanting line. (1) The former is by far the more common, and may be thought not to need exemplification; I give however some instances from mss. that are for any reason noticeable: παρά 1, 2 from Plato Paris 1807, παράκλησιν παραφυλακή Clarke 12, παραλιπών Demosth. Σ, παρά 3 Nonnus Par. suppl. grec A 469, παρά 4 Iliad Ven. A, παρά τόν Auct. E. 5. 9, παρά 5 παραδοξῶν Laur. 28, 3, παράσχωνται from so tachygraphic a ms. as Vat. 1982 (2) The other method in its nature, as Lehmann rightly observes, tachygraphic, is frequent in the Arethas-scholia; cf. παρά 6 παραβληθῇ D'Orv. Euclid, παραμυθησάμενος Plato, παρά 7 Lucian, παρὰ τοῖς Urbin. 35[3]. At the same time the Plato-scholia use the contrary system as well, e. g. παραδείγματα, παρὰ τόν. The cross-stroke is the usual method followed by the Grotta Ferrata school; in addition to Vat. 1809, cf. παραδεδομένον from Nonnus, παραδραμών Isidore, παράβασιν Angel. B. 3. 11. The twelfth-century ms. however, G. F. B. α. iii, has the more usual system: so παρά 10. (3) A certain number of mss. offer instances of both forms at once. Beside the Clarke Plato quoted above, cf. παρακαλῶ παρά 11 from Bodl. Auct. T. 4. 19, παρὰ μετρῶν παραβολῆς Mutin. 12. (4) I have

[1] Par. 3032 λόγους, Angel. B. 3. 11 (man. sec.) *αὐτούς*, Turin B. vii. 30 (s. X–XI) *ἄλλους*.

[2] The form of the sign for ου, in which it is not round but angular, occurs in Bodl. Auct. T. 4. 19 (s. X exeunt.) *ὀλισθαίνουσιν*, *τοῦ λαοῦ*, Par. 990 *συνελθούσης*; see further under *Tachygraphy*.

[3] Cf. also *παρὰ* 8 Vallicell. F. 10 (s. X), *παρα* 9 Vallicell. F. 47 (s. X).

noticed some variations in the more usual form which cannot be explained as coalescence of accent (Lehmann p. 91). The difference consists in a hook at the top of the upstroke, cf. παρασκευήν, παραδειγματικῶς, παρά 12 from Vat. 1298; it is curious that these forms, if the semi-circle were wanting, would be almost exactly like those given by Prof. Vitelli (p. 14) from Laur. 32, 9 and Laur. 59, 9 (*plate* nos. 7, 24, 25). An exaggeration of this variation appears to be the form παρά 13 which I take from Angel. C. 4. 15 (Liturgiae, a. 1165). Lastly, the singular form παρά 14 Angel. T. 1. 8 (s. XI) must apparently be explained as an individual error of the scribe's, who had (v. s. T) some acquaintance with tachygraphy.

ΠΡΟΣ. I have not seen the sign for πρός in the Arethas-scholia, and it will probably be found not to occur; its place is taken by πῤ. It is constant however in the *text* of the D'Orville Euclid (Stephanus) — a large and characteristic form: cf. nos. 1–4. A few instances of its occurrence elsewhere are πρόσωπον, πρὸς τά Demosth. Σ, πρός 5 Anth. Pal. (scholia to the Paris portion) προστάται πρός 6 Vat. 1298, προσκλώμενος, πρός 7, 8 Epictetus Bodl. misc. 251. A degraded form is πρός 9 from Barocc. 235 (Caten. in Psalm. s. XI)[1].

Τ. The representation of τ by two dots placed over or across the following vowel or syllable is one of the most characteristic and consistently carried out practices of Greek tachygraphy, and is found in mss. otherwise of the ordinary type of writing far more often than is usually supposed. It is in fact often the only trace of tachygraphy that a ms. will show. The scanty account in Lehmann has been greatly added to by Prof. Vitelli (τα, p. 11, 170, τας 11, 32,

[1] It is extraordinary that a doubt can exist as to the origin of this sign. The slightest reflection upon the forms given above leads us back to the type that is in use in Vat. 1809, and of which not a bad example will be found under the xiith century ms., Grotta Ferrata, B. α. iii, p. 34. Each of the four letters is represented. The speculations in Lehmann (p. 87) must be read to be believed.

τε ib., 173, τοῖc 11, του ib., τῷ 32, τῶν 170, τωc 11), and I am able to offer here some further collection of instances. The first example of each syllable, by way of type, is taken from the British Museum Nonnus; cases where the example comes from the strictly tachygraphic part of that ms. are enclosed in brackets. The notation appears entirely absent from the Arethas-scholia.

ΤΆΙ[1]: μέμνηται Nonn., φοβοῦνται Par. 990, ἔσται Par. 3032.

ΤΆΙC: 1 from Nonn., 2 Laur. 28, 3.

ΤΆΝ: ὅτἄν 1 Nonn., ὅτἄν 2 Par. 3032.

ΤΆC: πάντας Nonn., ἔχοντας Demosth. Σ, τάς Vat. 1982, ἑαυτάς Angel. T. 1. 8, ἀπεμπολοῦντας Vallicell. E. 40, πολεμοῦντας Barocc. 138 (s. XII), τάς Bodl. Misc. 251, καταφοβοῦντας Par. 990, τοπάζοντας Turin B. 1. 22 (a. 1149).

ΤΆΥ: ταύταις Nonn., ἐνταῦθα Vat. 1982, ταύτης Grott. Ferr. B. α. iii, ταῦτα Par. 990.

ΤЄ: ὥστε Nonn., τότε ποτε Clarke 12, οὔτε (1, 2) ὥστε Vat. 1298, οὔτε 3 Bologn. Archigin. A. 1. 18, ὥστε 3 Thucydid. Brit. Mus. Add. 11,727 (s. XI), ποτε 2, οὔτε 4, ἐνιότε ὥστε 4 Hermog. Par. grec 1983, οὔτε 5, τυποτε Bodl. Auct. E. 5. 9, ὥστε 5, Vat. 191 (circ. 1404), τέκνοις, ἡμέτεροις Par. 990, ποτε τοτε ὥστε μήτε Neap. II. A a. 22.

ΤЄC: φωτισθέντες Nonn., λέοντες Mutin. 126 (Clement), ἀναβάντες Clarke 12, ὄντες ἔχοντες Laur. 28, 3, ἐνίζοντες Grott. Ferr. B. α. iv (992), πάντες Iliad Ven. A, φθάσαντες παλαίσαντες Vat. 1982, πάντες ἀπολαύσοντες Angel. T. 1. 8, καιροσκοποῦντες Mutin. 12 (s. XII), περιλαβόντες Hermog. Par. grec 1983, μοσχοποιήσαντες Barocc. 138, δράσαντες Angel. B. 3. 11 (man. 2)[2].

[1] For τα v. s. A.

[2] I have not concerned myself, here or under ες, with the illegitimate use of the two dots in the sense of ες. It is worth recording however that the use occurs *passim* in the Ravenna Aristophanes, and is most remarkable in a ms. of

ΤΗΝ: 1 Nonn., 2 Grott. Ferr. B. α. iv, 3 Laud. gr. 1 *passim*, 4 Vallicell. D. 43.

ΤΙ: παρέστι Vat. 1982.

ΤΙΝ: ἐστιν Grott. Ferr. B. α. iii.

ΤΟ: ἐκτᾶτο Nonn., πρωτοκάθεδροι Par. 990, τούτο Par. 3032.

ΤΟΙC: τούτοις Nonn., τοῖς Vat. 1982, τοῖς δικαιοις Par. 990.

ΤΟΝ: αὐτόν Nonn., ἑαυτόν ἐφεαυτόν Vat. 1982, τὸν, φθαρτον Par. 990.

ΤΟC: αὐτός Nonn., σώματος ουτος Vat. 1982, δια παγτος Par. 990.

ΤΟΥ: αὐτοῦ Nonn., τοῦ χριστου Par. 990, του φιλοσοφου Arch. S. Petr. H. 45 (Galen, s. XII–XIII).

ΤΟΥC: τούς Nonn., αὐτούς τοὺς Vat. 1982.

ΤΩ: οὕτω Nonn., αὐτῷ ἑαυτῷ οὕτω Vat. 1982, ἀμυήτω Par. 990.

ΤΩΝ: πάντων τῶν νέων Vat. 1982, τῶν ὄντων Angel. T. 1. 8, τῶν Mutin. 12, πάντων D'Orvill. X. 1. 1, 2 (Etym. magn. s. XIV), φοιτώντων Par. 990.

ΤΩC: οὕτως Nonn., εἰκότως οὕτως Vat. 1982, πάντως ἀδιαστάτως Angel. T. 1. 8, λελησότως Bodl. misc. 251, οὑτως Par. 990.

ΥΠΕΡ. The tachygraphic abbreviation for ὑπέρ cannot be said to occur frequently outside of the Grotta Ferrata school; I have not found it in the Arethas-scholia. Cf. however ὑπὲρ τῶν ὑπὲρ φωκέων from Demosth. Σ, ὑπέρ 1 from Grott. Ferr. B. α. xix (a. 965), ὑπέρ 2 ὑπὲρ σοῦ Nonnus, ὑπὲρ λόγον Gr. Ferr. B. α. i, ὑπέρ 3 ὑπερβάς Angel. B. 3. 11. For the partial-abbreviation, which is frequent, v. s. ΕΡ.

that age and style. Cf. *διεκπερῶντες* (text), *τεχνήεντες* (scholia, man. pr.). This coincidence between the text and the first hand of the scholia may serve as another proof of the identity of the hands, in addition to those already brought together by M. Albert Martin in his admirable study upon this ms.

ΥΠΟ. A tachygraphical contraction for ὑπό occurs more frequently than for ὑπερ but without being itself common. There appear to be two distinct symbols in use: (1) one, already known from tachygraphy, and frequent in the Grotta Ferrata mss.: so ϟπό 1 G. F. B. α. xix, ὑπό 2 ὑπὸ τᾶc ὑπονοίαις Nonnus, ὑποζύγιον Angel. B. 3. 11, ὑπὸ 3 Par. 990[1]. (2) Another sign, quite unlike the former, already quoted by Bast (p. 794) from S. Germ. 249, is identical in shape with the symbol for ἀπό (q. v.) so largely used by the Grotta Ferrata school, and only distinguished from it by the breathing, or in fact, where the breathing is ambiguous or incorrect, by the context. Certain instances are ὑποδεικνύοντα, ὑπὸ κακοῦ, ὑπό 4 from the Bodl. Epictetus, Misc. 251; the same form is probably given by Vat. 1982 in υποδεθεῖσα (sine spir.), and further by a late mathematical ms., Vat. 191 circ. 1404, ὑπο 5 (*sic*). The fact of one compendium standing for both ἀπό and ὑπό at once suggests that the letters actually denoted by the sign must be those common to both words, viz. π + ο; and though I do not hold this conjecture proved, especially as regards the *o*, it may at all events strengthen the conclusion arrived at by Lehmann (p. 84) from consideration of ἀπό alone.

ΩΝ. Under this head I have to notice the tachygraphic sign, rightly described by Lehmann at the beginning of his article as a waved line; it is in fact not unlike an open omega inverted. In this form it is used by an ancient hand

[1] The argumentation between Gitlbauer and Lehmann (Lehm. p. 88) upon the origin and relation of the signs for *ὑπέρ* and *ὑπό*, does not perhaps admit of proof or disproof; but it may be allowable to suggest another hypothesis that appears at least as probable. Lehmann justly doubts Gitlbauer's half-revolution of the sign for *ὑπέρ* as a preliminary to explaining it; but his own analysis of it, and especially his theory of the original identity of the two signs, appear to me no less arbitrary. A simple comparison of the common letters in *ὑπέρ*, *ὑπό*, with the common strokes in the two compendia suggests that (1) the left-hand stroke in *ὑπέρ* is *ρ*, while the left-hand stroke in *ὑπό* is ο (the tachygraphic ο is a line bent into two curves); (2) that the right-hand cross-stroke in either case is a mere mark of abbreviation, to erect the letters *ρ* and ο into substantive symbols for *ὑπέρ* and *ὑπό*. For an analogy I may refer to my own analysis of the strange sign for *εις* (p. 12).

among the Plato Arethas-scholia, e. g. τῶν ὄντων, ἀρχῶν, πλάτων (as a rule the Arethas-mss. use the ordinary form, and that as often within the word as at the end). Cf. also τῶν νέων Vat. 1982, τῶν θεωρημάτων, τῶν ἁγίων Mutin. 12[1]. Early dated examples of the coalescence of the circumflex accent with the ordinary sign (Vitelli p. 10, n. 2) are τῶν Genuens. 2 (a. 1075), ψυχῶν Angel. C. 4. 15 (a. 1165).

ΩΡ. A few instances of the compendium for this syllable, to be added to those given by Vitelli (pp. 15, 32, 171) are: ῥήτωρ Clarke Plato, γεωργικῶν Harl. Lucian (both in the scholia), ἕκτωρ Iliad Laur. 32, 15 (text), μητροπάτωρ Laur. 5, 3 (not cited, I think, by Prof. Vitelli), ἀντιλήπτωρ Laud. gr. 1, ὕδωρ Mutin. 193 (Lucian, s. XI–XII, text), ὁ ῥήτωρ Bodl. Misc. 251, παντοκράτωρ Vallicell. E. 29 (s. X), γεώργιος Neap. II. A a. 22.

ΩΣ. The examples that I give of ὡc are meant to illustrate its form and its position with regard to the line. (1) The slight variation by which the last curve of the sign takes a turn upwards, is, as Bast notices, a peculiarity of the strongly-marked writing of the Plato Paris grec 1807 (cf. ὡc 1, οὕτωc, ἀττικῶc), but it is found also in the text of the D'Orville Euclid f. 120 v. αὕτωc, and it existed in the 'codex Vallae' of Archimedes from which Angel. C. 2. 6 was copied; cf. the passage in the plate from f. 222 v. explaining ωc and πωc[2]. (2) The syllable is found written on the line most constantly in mss. more or less connected with tachygraphy, e. g. οὕτωc Nonnus, ὥστε Angel. B. 3. 11, φύσεωc Grott. Ferr. B. α. iv, ὥσπερ ib. B. α. iii, οὕτωc καρέωc Vat. 1982, but not unfrequently elsewhere, so ὥστε ὥσπερ often in the Arethas-scholia, ὡc 2 Laur. 28, 3[3].

[1] A few more examples are *των* 1 Vallicell. F. 10, *τῶν* 2 Vat. 1456 (s. XI), *πλάτων* Par. 3032, *πάντων* Par. 990, *τῶν αἱρετικῶν* Ven. 450 (Phot. Bibl. s. X).

[2] I make bold to explain in this way the sign given by Prof. Vitelli, plate II. no. 40, p. 172, n. 2: it is *ως+ερ*, i. e. *ὥσπερ*, which, as Prof. Vitelli says, is demanded by the context. Another instance of this form of *ως* is *ὄφεως* Vat. 2 (s. XI).

[3] The beginner may with profit contemplate the fourth example of *ὡς* in

ΩΣΠΕΡ. I do not remember to have seen or read of a *single* sign for ὥσπερ; the separate abbreviation of either syllable is of course frequent enough. A ligature, consisting of the tachygraphical signs for both syllables interlaced, is given by the ms. Etym. Magn. D'Orville x. 1. 1, 2 s. XIV, of which a facsimile is prefixed to Gaisford's edition of the E. M.; cf. no. 1 from f. 289 v., no. 2 from 288 r.; both are at the end of the line. The context of the first is, ἱστέον δὲ ὅτι ὥσπερ λέγεται κροῦμα καὶ κροῦσμα, οὕτω λέγεται χρίμα καὶ χρίσμα. The formation of the symbol is clear if we compare ὥσπερ, ὅπερ from the tachygraphic part of Nonnus [1].

TACHYGRAPHY. It has been often pointed out that in Greek minuscule and late uncial writing there are two systems of abbreviation in use at once: one, of rare occurrence and of obviously tachygraphic origin, the other, far commoner, and though also ultimately tachygraphic in source, so familiar as to be known by contrast as the 'ordinary' system. Facts as to the coincidences and divergencies of the two systems are well given by Lehmann in his introductory chapters, and a masterly sketch of the subject, with illustrations, will be found in Graux' review of Gardthausen, *Journal des Savants* 1881, p. 312 sq. The extent to which the 'tachygraphic' system entered into the writing of ordinary books is one of the questions in palaeography which most stand in need of additional evidence. That the system was far more widely spread and more generally used in books than was commonly supposed, there

Lehmann, § 47. He will not get light from Gardthausen, p. 258, nor even from Diels' explanation of the Fragmentum Bobiense, Hermes 1877, p. 421 sq.

[1] I have in this tract hardly touched the large and interesting province of mathematical signs. I may however here mention one that is quoted by Hultsch *ap.* Gardthausen from Vat. 211, but that has not hitherto found an explanation. It represents *χωρίον*, and is found with or without case-ending. Examples 1 and 2 are *χωρίον*, 3 *χωρίοις*, 4 *χωρία*. All these come from Euclid Laur. 28, 3. The usage occurs also in the D'Orv. Euclid, but at the moment of writing I am without examples. It consists of *χ* and *ρ* rendered tachygraphically, upon the same system as that employed in Vat. 1809; cf. any page of Gitlbauer's facsimile. The second cross-stroke is doubtless a mark of abbreviation.

can be no doubt; but whether any principle governed its employment, and whether any place, persons or style of author can be connected with it, must for the present remain an open question. One of the few facts known for certain is that the later tachygraphical system was practised by monks of the order of S. Basil, and in especial by the Basilian school of Grotta Ferrata near Rome. Of the eleven manuscripts whose usage I proceed to summarise, seven were certainly written at Grotta Ferrata, one may have been, and another, though written elsewhere, was the work of a Basilian [1].

(1) An account of the history of the school of S. Nilo at Grotta Ferrata, the monastery and village between Frascati and Marino on the lower slopes of the Alban Hills, is to be looked for in the *Prolegomena* that are to complete the catalogue not long since published by the learned librarian of the Abbey, P. Antonio Rocchi [2]. In the mean time it may be convenient to say that San Nilo, the founder of the monastery at the close of the tenth century, established therewith a school and style of writing. The school may be said to continue, at least in the person of the Bibliothecarius, to the present day; the distinctive characteristics of the handwriting of S. Nilo [3] may be traced, in mss. written by his disciples, for more than a generation. Manuscripts with which I am acquainted that exhibit this type of writing are, beside the three books in the hand of S. Nilo himself (B. α. xix, xx, xxi), two mss. still in the monastery, B. α. i and B. α. iv, one in the Biblioteca Angelica at Rome, B. 3. 11, the London Nonnus [4], and

[1] For examples of tachygraphy published since the appearance of Lehmann's book cf. Vitelli, *Spicilegio Fiorentino*, Desrousseaux, *Mélanges de l'École Française de Rome*, 1886, p. 544 sq., Gitlbauer, *Philologische Streifzüge*, 1886, p. 387 sq.

[2] Codices Cryptenses, Tusculani, 1883.

[3] Cf. the extract from the *Vita Nili Rom.* 1624, p. 28, quoted by Rocchi under B. α. xix: *literarum forma utens densa et minuta.* Facsimiles of the three Grotta Ferrata mss., and the one from the Angelica are shortly to be published by the Palaeographical Society.

[4] When I was at Rome the celebrated Vat. 1809 was temporarily inacces-

the fragment Vallicell. D. 43. The type loses its chief characteristics in the twelfth century, but still exists as a particularly neat and close minuscule; authentic examples are B. α. iii, and the latter part of Angelica B. 3. 11. I have imagined resemblances in Mutinensis 12 and Bodl. Rawl. 156. It has always been well known that S. Nilo's disciples were tachygraphers, and the two great examples of their production in this direction, Vat. 1809 and Brit. Mus. add. 18,231 have been more or less carefully examined; but for our knowledge of the codices that still remain in the Abbey we still depend practically upon Montfaucon and Piacentini. A stay of five days at Grotta Ferrata in May of last year (1888) gave me opportunity to inspect the library with this purpose. I have to thank Padre Rocchi's benevolence not only for access to the manuscripts that he knows so well, but for the arrangements that he was good enough to undertake for my entertainment in the village. May he accept an imperfect acknowledgment of one of the pleasantest weeks that have fallen to the writer's experience.

The three mss. in the hand of S. Nilo (a. 965) are unabbreviated. On the last four pages however of B. α. xix occur a considerable number of compendia; most noticeable tachygraphically are ὑπὲρ (ὑπὲρ τοῦ λαοῦ), ὑπό, and ισ in ἡ ἁπλὴ γνῶσις. The last sign is one of the rarest of those in use by the school, and will probably hardly exist elsewhere than in the purely tachygraphical parts of Vat. 1809 and Nonnus and, in ordinary writing, in Vallicell. D. 43. The other mss. appear to give the syllable always in full. Vat. 1982 gives the common sign, v. s. ΕΙΣ (ἴασις).

(2) The ms. of the British Museum, add. mss. 18,231,

sible; but to judge from Gitlbauer's facsimile of the *tachygraphical* part, the style of S. Nilo is to be recognised there also: it is of course well known, independently of the hand, that the ms. came from Grotta Ferrata. Lastly, from the description given by Graux (*Arch. des Missions*, etc. 3°. sér. V. p. 123) of the ms. O. 74 of the Biblioteca Nacional at Madrid it would seem that it also belonged to the 'Scuola di san Nilo.'

containing works by Gregory Nazianzen with the comment of Nonnus, has for some years past been known to offer extensive examples of tachygraphy; I need not refer to the passages in the handbooks where it is noticed, nor to the facsimiles of pages in the various collections. It may be said to exhibit three styles of writing: (*a*) minuscule: the text, only rarely abbreviated, and various introductions, indices, etc. (ff. 4 v., 12, 13, 14 v., 15 r., 318 r.–330 v.) which on the contrary are very closely contracted; (*b*) scholia in large semi-uncial, which, beginning almost without contractions, gradually increase the percentage of signs till they almost reach pure tachygraphy; (*c*) purely tachygraphical marginal remarks, glosses and corrections. In this article I deal with tachygraphy only in so far as it is introduced into ordinary writing, and therefore it is only the first of these three classes that I here notice. It is to be hoped indeed that the whole tachygraphical contents of the ms. may some day be made public, but I offer here nothing beyond a collection of the tachygraphical signs that are found in the minuscule part of it. The ms. was written, it is well known, in 972, but the writer has not given his name. Lehmann (p. 53) has rightly concluded, from a comparison of facsimiles, that it belongs to the Grotta Ferrata school, and the resemblance is obvious to anyone who has been both at London and Grotta Ferrata; but he is certainly wrong in identifying the scribe with Paul who wrote the Isidore. The editors of the Palaeographical Society, who in their forthcoming fasciculus publish several facsimiles of Grotta Ferrata mss., decide that the hand of Nonnus is the same as that of the Angelica Theodoretus, to be noticed below; and there is a clear difference of writing between these mss. and the Isidore. A graver fault, however, with regard to this ms. has been committed by Lehmann, than the wrong identification of its hand. Relying upon the evidence of the facsimile of a single page, he has in various places of his book made general statements of the usage of the entire

mss.—which are wrong; and based upon them theories as to the history of Tachygraphy, which are necessarily even further from the truth. It is sufficient to warn anyone who uses the book that the statements in pp. 21, 22, 53, 54, 57, 67, as to the representations in the Nonnus of the syllables ειν, ιν, εις, are incorrect. The matter is the most serious blot in a meritorious handbook, and a conspicuous example of the results of 'Palaeography from Facsimiles.'

The manuscript then, in this part of it, exhibits specifically tachygraphical signs for the following syllables: αι, αις, ἀπο, αρ, ειν, εν, ἐπι, ιγ, ου, παρα, τα, την, -τ' ἐστι, τως, ὑπερ, ὑπο. Cf. the words φαιδρότατε, εὐχαῖς, ἀπὸ, ὑπάρχειν, συμπράττειν, κατήνεγκεν, ἐπικαθίσας, ἔτεσιν, οὐδείς, ἰουδαῖος, τήν τε, τοῦτ' ἐστί, οὕτως, ὑπὲρ, ὑπονοίαις. Here the frequent use of αι, αις, ειν, ιν and especially ου, is noticeable; the last compendium occurs in 'ordinary writing,' only in the mss. Vallicell. D. 43 and Par. 990. The curiously consistent contraction for τοῦτ' ἐστὶ also deserves notice; in the semi-uncial scholia the words are still farther abbreviated. Otherwise the use of the symbol for Ταυ is singularly limited. The other signs are more or less characteristic of the school. For instances of τὰ v. *ante* s. A; the usage of the manuscript for αρ, εἶναι, ἐρ, κατά, παρά has also been previously illustrated. Lehmann's statement that ιc in this ms. is always written in full, is true to the extent that the tachygraphical sign does not occur in this part of the ms.; in the scholia and the pure tachygraphic glosses it is common, and in the minuscule part itself the ordinary sign sometimes represents the syllable: v. *ante* s. ΕΙC. The sign for ιο, as I have already noticed, is very rare in all the Grotta Ferrata school.

(3) The Biblioteca Angelica at Rome possesses one ms. of the school of Grotta Ferrata, Theodoretus B. 3. 11. The book consists of two parts, of which the first is of the tenth century, the second of the eleventh or twelfth. A description of it will be found in my notes on the Angelica

shortly to appear in the *Classical Review*, and in the current fasciculus of the Palaeographical Society, where a facsimile of a page from the first part is given. This earlier hand is the same, Mr. Maunde Thompson tells me, as that of the London Nonnus of A.D. 972; it is very considerably abbreviated. The second hand, though later, is not without traces of tachygraphy, v. *ante* s. EN. The tachygraphical signs used by the first hand are as follows: αι (σημαίνει), αις (τιμωρίαις), ἀπο (*ante*), αρ (*id.*), ειν (τυχεῖν), εις (ἡμεῖς, οὐδείς), ἐπι (ἐπικαλέσωνται), ερ (*ante*), ιν (ὑακίνθινον), παρὰ (*ante*), ὑπερ (*id.*), ὑπο (*id.*).

(4) The well-known Isidore, B. α. i, written in 986 by Paul, second Abbot of Grotta Ferrata, offers the following distinctively tachygraphical signs: αι (σκολιαί), αις (διαθήκαις) αρ, and combinations of α with other letters (*ante*), ἀπό (*ante*), ει (δαμάζει)[1], ειν (ὑφαίνειν), ἐπι (ἐπιθυμίαις), ερ (*ante*), ιν (ἄσκησιν), παρά (*ante*), ὑπὲρ (ὑπὲρ λόγου). It is curious that neither here nor in Angel. B. 3. 11 is there any employment of the double dots for τ which are so frequent in most mss. that are at all tachygraphic. The scribe uses the ordinary system of abbreviation freely, and the total proportion of contracted words is large.

(5) It was my good fortune to have brought to me in the Biblioteca Vallicelliana at Rome, one day in February of this year, a Latin ms. numbered D. 43, of the Dialogues of S. Gregorius Magnus, saec. XI, at the end of which were bound up two leaves of a Greek ms. in the writing of Grotta Ferrata. A photograph of one leaf was sent to Pre. Rocchi at the Monastery, and he was afterwards good enough to examine the ms. itself. His conclusion as to the hand is, I am happy to say, a confirmation of what suggested itself to me at first sight: that the writer is Paul, monk of Grotta Ferrata, the scribe of the Isidore B. α. i.

[1] An unusual way of rendering ει. The diacritic point is appended to the sign for αι. In Vat. 1809, as one sees in Gitlbauer's facsimile, it is *iota* and the diacritic point that together give ει.

The subject-matter is harder to determine; the leaves contain, as a librarian's note on the first of them and at the beginning of the ms. says, 'fragmentum indicis codicis antiqui,' but the work to which the index was prefixed Pre. Rocchi was unable to discover; it was probably, in his opinion, a commentary on part of the New Testament, possibly S. Paul's Epistles.

The interest however of the fragment is palaeographical. The leaves, numbered 88 and 89, measure $10\frac{3}{4} \times 8$ in., are in double columns with 44 lines in each; they together form one sheet of vellum, and, the text being continuous, must therefore have been the middle leaves of a quire; the flesh-side of the vellum is outward, the rulings are on the hair-side. The writing is above the line. The abbreviations are extraordinarily numerous; both in this respect and for the rarity of some of the symbols used, no other piece of 'ordinary writing' at present known to have come from Grotta Ferrata can compare with these two pages. The following list gives the tachygraphical signs that I have found: α, αι, αις, ανα, απο, αρ, εις, εκ, επι, ερ, εστι, εισι, ειναι, ιν, ις, ου, παρα, τοῦ]τέστί, την, ὑπερ, υπο: cf. the words καθ' ὅτι, φαίνεται, νεφέλαις, ἀναγεννῶνται, αποδημεῖ, ἀπαρχή, σαφεῖς, ἐκδημεῖ ἐκτός, ἐπιφαινόμενου, μετερχομένους, ἐστι, εἰσί, εἶναι, αἰτοῦσιν, θέμις, οὐκ, νοούμενος, παρα, τοῦτεστί, παραβάτην, ὑπερ, ὑποζύγιον. Of these signs four are of great rarity, ἀνα, ἐκ, ις, ου: of ἀνα I do not know another instance in ordinary bookhand; Nonnus has it, but in the tachygraphical portion: ἐκ occurs also in Vat. 1982 and Par. grec 990: ις, as I have already observed, is found elsewhere only in G. F. B. 1. xix, and ου only in Nonnus and Par. grec 990. It is instructive to compare the amount of abbreviation used by the same scribe in these two mss., G. F. B. α. 1 and Vallicell. D. 43.

(6) The ms. of S. Maximus, Grott. Ferr. B. α. iv written in 992 by Neophytus, is far less widely contracted than the Isidore, while on the other hand it offers some examples of

signs which that ms. does not use. Cf. αι (ὅτι ναί), ἐκ (ὡς ἐκ τοῦ), εν (ὁμιλοῦμεν), ιν (θέλησιν), τες (*ante*), την (id.): a small piece of more continuous tachygraphy occurs on the margin of f. 390; ρήτων μυστηρίων.

(7) Again ms. B. α. iii (s. XII according to Rocchi), in a good calligraphic hand, has, with an abundance of compendia of the ordinary sort (cf. s. A, AP, EIN, EP, etc.), the peculiarity of the tachygraphic sign for αυ, unknown elsewhere in the ordinary writing of the school, but very frequent here, whether as αυ or ταυ: cf. s. AY and the examples ταύτης, ταυτήν, ἑαυτόν, αὐτήν: I take a longer piece of tachygraphy from f. 67 v. θέσθαι δὲ μόνῳ τῷ πρὸς ἀλήθειαν [?] βλέποντι.

(8) Montfaucon Pal. Graec. p. 283 gives a facsimile of a manuscript in the house of the Basilian order at Rome. The entire collection once belonging to this order is well known to be now in the Vatican, where it is incorporated under the 'Vaticani graeci,' beginning at 1962. The particular ms. intended by Montfaucon is, as I have found out, Vat. 1982 or Basil. 21. Its description is as follows: membr. 8 × 5½ in., ff. 223; ff. 1–189 are in ordinary script, 36 lines on a page, in a rather small good eleventh-century hand below the line, only slightly contracted; ff. 190 r., 190 v., 191 r., being blank leaves of the same book, are filled with contemporary semi-tachygraphic writing, containing on 190 r. and v. various medical receipts, on 190 v. 191 r. an extract from Chrysostom (inc. τὰ γὰρ πλεῖστα τῶν ἁμαρτημάτων), 191 v. is blank. Ff. 192–223 are apparently a different book, in a much smaller but contemporary hand, much abbreviated, 29 lines to the page, containing S. Basil's λόγοι on various portions of scripture, the first being that on Psalm VII which Montfaucon facsimiled; it is defective at the end. The book may have *come* from Grotta Ferrata, but was certainly not written there, for on a modern fly-leaf at the beginning is the inscription *Ex libris MS. Monasterii*

S. Helie Carbonensis[1] *Nullius Dioecesis, Anglonen. Ordinis S. Basilii Magni*, and the hand bears not the slightest resemblance to that of the famous Isidore of Grotta Ferrata; it is in fact hard to see what can have suggested their identity to Montfaucon[2].

The ms. appears to use the following tachygraphical signs: αις (παροιμίαις), αυ (ἐνταῦθα), ἀπο (ἀπὸ τῶν), δε (*ante*), ἐκ (no. 1), ἐν (*ante*), ἐπι (ἐπιθυμίας), κα (both with a dot, as κατεχόμενοι, and without, as καλλιφωνίας), καρ (καρδία), κατα (καταφθείρει), μα (σπέρμα), μαρ (ἁμαρτημάτων), σα (ῥιπισθεῖσα), τα, τας, τες, τοις, τον, τοῦ, του, τους, τω, των, τως (*ante*), ὑπο (ὑποδεθεῖσα), ων (*ante*); see also under Α, ΑΕ, ΕΙΝΑΙ, ΕΙC, ΠΑΡΑ. The most noticeable points are the use of some quite rare forms, such as ἐκ, κα, καρ, μα, μαρ, σα (μα and σα very frequently), the series of τ-syllables, and the absence of signs[3] for αι, ειν, ιν, εις, ις, ὑπερ, ὑπο (in the more usual form, cf. *ante*), syllables which are so common in the Grotta Ferrata school. I add a phrase that I cannot at present decipher, from f. 190 r; the words immediately preceding are ταῦτα λέξας ὁ σωτήρ.

(9) A manuscript in the Estense at Modena, ii. A. 12, S. Maximus de caritate, shows some tachygraphical influence: it is of the eleventh to twelfth century, membr. $5\frac{1}{4} \times 4$in., ff. 135, in two hands, of which it is the former (ff. 1–56) that is partly tachygraphical. The non-tachygraphic abbreviations are uniformly of the later type: e.g. those for εις, ις, ειν, ιν (q. v. *ante*). Tachygraphic signs occur for αρ (σαρκός), ιν (γνῶσιν, ποιῶσιν), παρα (*ante*), τα, τες, των (*ante*), ων (ὀστέων); the most noticeable of these is that for ιν, which is very frequent. This hand is upright and well-formed, and bears some resemblance to the twelfth-

[1] MSS. from this Library are now to be found at Grotta Ferrata, e.g. Δ. *a*. xiii sq.

[2] Montfaucon's mistake had already been perceived, from a comparison of facsimiles, by Lehmann, p. 54.

[3] That is, tachygraphic signs.

century type of Grotta Ferrata hand, as shown in B. α. iii. The second hand is quite dissimilar.

(10) I have next to mention a ms. that has long been famous in the history of Greek tachygraphy—that of Hermogenes at Paris, which is now numbered *grec* 3032. From this book Montfaucon took his 'notae rhetoricae et oratoriae omnium lectu difficillimae,' which for more than a century were the only published examples of Greek shorthand; they reappeared, as is well known, with an improved interpretation in Kopp's 'Palaeographia Critica,' in 1817. It is not however with this venerable material that I have to concern myself. The book falls into two parts, the text and the marginal annotations, and it is the latter that Montfaucon published and Kopp revised. Of the text, on the other hand, no account hitherto has been taken; it offers nevertheless considerable palaeographical interest.

The ms. is a small vellum book, pp. 152, of no doubt the tenth century, in quaternions, written, mostly below the line, in a small upright ornamental minuscule, considerably ligatured; in the margin, not very constantly, are annotations in pure tachygraphy in the same hand as that of the text, and in characters quite as large. We have therefore an instance of what may be called the normal case for the introduction of tachygraphy into book-hand; the case namely where a scribe accustomed to practise the tachygraphical system sets himself to write a book for the purposes of an ordinary reading public. For much the greater proportion of his text, abbreviation of any sort is excluded; but at times, and especially at the ends of lines, it is legitimate, and it is inevitable that here, a scribe who is cognisant of tachygraphy will borrow signs from it as well as from the system of abbreviation ordinarily in use. Mss. of the sort are the London Nonnus, where the text is as a rule written out in full, not however without a diligent inspection of ends of lines yielding a fair return of

tachygraphical symbols, and the second part of Angel. B. 3. 11, where the tradition of the school manifests itself in the same manner in a twelfth-century hand.

This is precisely what has happened in the ms. in question, Par. grec 3032. The text is on the whole little contracted, but frequently at the ends of lines, and occasionally in the body of the paragraph, the scribe allows himself to shorten a word, adopting the same system as that in which he afterwards wrote his marginal comments. A considerable number therefore of signs usually considered tachygraphical may be taken from the text of this ms. I enumerate those that I have found, adding that as my study both of this and the following ms. was short, the list must not be considered exhaustive. Syllables represented are: αι (δύναμαι), απο (ἀποβλέπων), αρα (ἄρα), νου (αἰσχίνου), οι (δοῦλοι), ον (τόν, φίλιππον), ος (πλῆθος), ὅτι (*bis*), σ (παραδείγματος), ται (ἔσται), ταν (ὅταν), το (τοῦτο), ων (πλάτων). V. also s. ΟΥϹ.

(11) Another tachygraphical Paris ms., *grec* 990, has been indicated and in part described by Ch. Graux, in the brilliant sketch of Greek Tachygraphy to which I have already referred, *Journal des Savants*, 1881, pp. 316, 317. I learn from M. Omont that there is no likelihood of the complete study of the ms., which is there promised, being published, and I therefore take the opportunity of giving here such further particulars as I was able to gather during a short inspection of the ms. I lament that my account is not fuller, and does not better take the place of the authoritative study that was to have been expected of the regretted French palaeographer; but, as tachygraphy now stands, the addition of even a handful of new forms is worth making, especially when, as in the present instance, there are at hand the means for reproduction.

The ms. is dated 1030, and is of the ordinary minuscule of that period; there is nothing in the character of the hand to suggest the tachygraphical knowledge of the

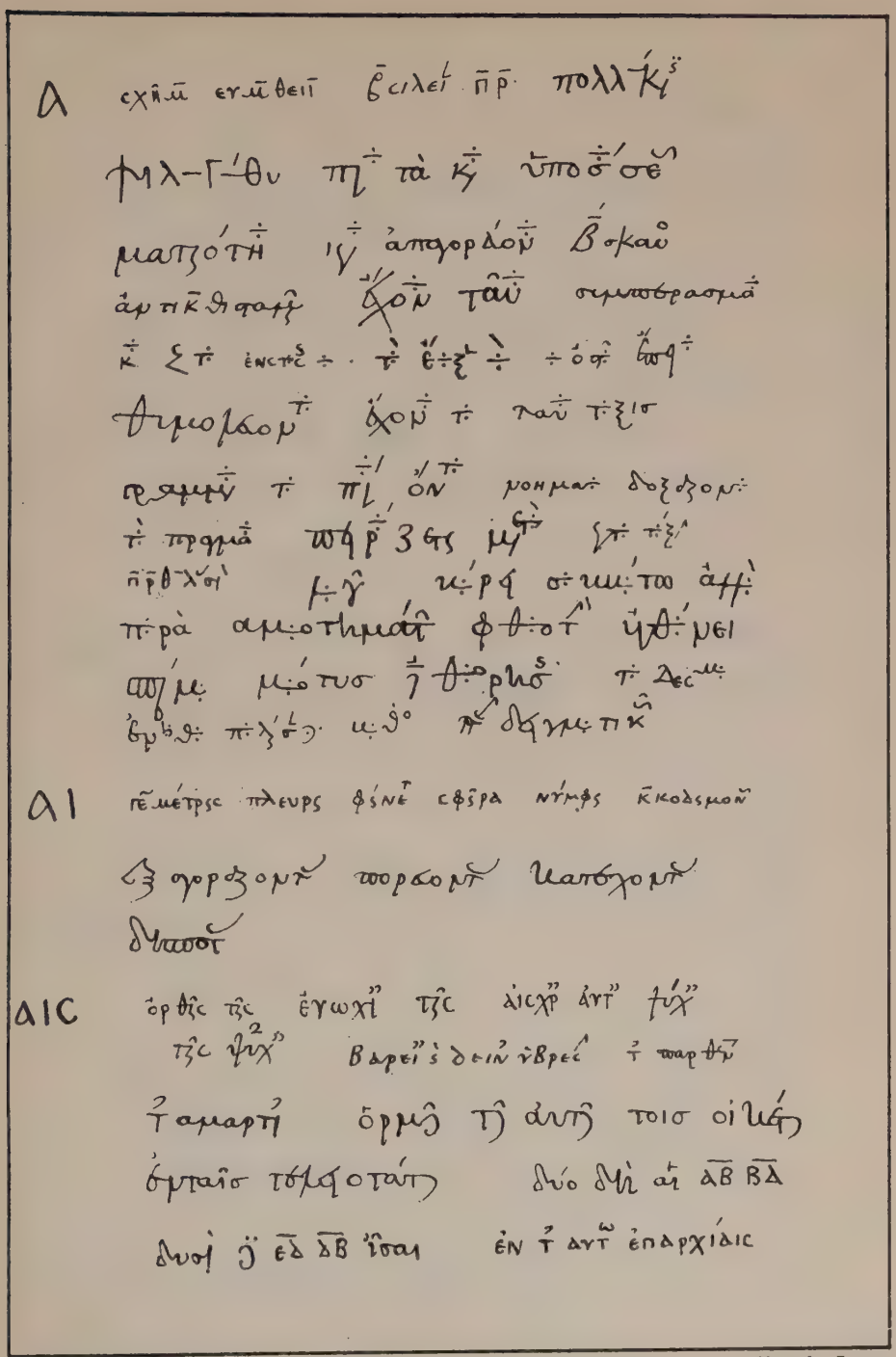
scribe. The ordinary compendia that are used, e. g. for αιc, ειν, exhibit the later stage of the forms. The ms. contains the poems of S. Gregory Nazianzen with a prose paraphrase, in parallel columns; it is in the paraphrase, according to the necessities of space, as Graux clearly describes, that the abbreviations occur. I have observed the following, to which must be added the forms already quoted by Graux, the most interesting of which are πο and δοc:

αι (μωραίνοντες), αιc (ἀνοίαις), αλ (ὀφθαλμούς), ἀπο (ἀπὸ στέρησις), αυ (παύσεται), ελ (βέλτιστον), ἐπι (no. 1), ερ (παρέρχεται), ευ (πνεῦμα), ιν (καλοῦσιν), κα (κατέλαβεν), καὶ (no. 2), κατα (καταλαμβάνω), με (no. 3 μετά), οι (ἄνεμοι), ὁμοῦ (no. 4), ον (ὄντως, τόν), ου (συνελθούσης), παν (πάντως), ραυ (no. 5 κεραυνός), τα (πάντα, ταῦτα, ὑπερειδώματα), ται (φοβοῦνται), τας (καταφοβοῦντας), ταυ (v. ταῦτα above), τε (τέκνοις, ημετέροις), τηc (τηc θαλασσηc), το (πρωτοκάθεδροι), τοιc (τοῖc δικαίοις), τον (φθαρτόν, τὸν), τοc (κλαπέντος), του (τοῦ χρίστου), τω (ἀμυήτω), των (φοιτώντων), τωc (οὕτως), ὑπο (ὑπὸ τὴν), ων (ὠθῶν).

A remark or two upon some of these forms may be in place; to discuss the ms. as a whole will need more complete examination. The syllables αλ, ελ, με, ραυ are of very great rarity. I do not know if parallels can be quoted from any ms. but Vat. 1809 and Add. mss. 18231. The form οι is illustrated by Graux l. c., and by Vitelli *Spic. Fiorent.* pp. 13, 168: it must still be called rare. The form ευ has been found by Martin in the scholia to the Ravenna Aristophanes; the tachygraphical π, as in πάντωc, is very uncommon in ordinary bookhand; the sign for ον is not generally found on the line; καὶ represented by three dots occurs elsewhere in Vat. 1809, Add. mss. 18231, in some Laurentian mss. quoted by Vitelli, pp. 15, 32, and in the late ms. Vat. Pal. 73 discussed by M. Desrousseaux (v. p. 28, n. 1). With regard to the series of Tau-abbreviations, there is to be noticed the freedom with which the dots are superimposed instead (their more usual position), of being arranged one on either side of a stroke of the sign for the following syllable;

the τωv of this ms. compared with the same syllable in Vat. 1982 will illustrate the difference. It is obviously a mere convenience of the scribe's, and not a distinct usage. A somewhat erroneous idea of the origin of these two dots is given by Gardthausen *Griech. Paläogr.* p. 199.

In conclusion it is convenient to notice here some mss. which offer one or two tachygraphical signs only. One such is a ms. of Galen, H. 45 in the Capitular Library of S. Peter's at Rome, of the xii–xiiith century, written on palimpsest vellum; the text offers no peculiarities, but at the end is written in red the sentence τοῦ φιλοσόφου κυροῦ φιλαγάθου, in the manner represented in the plate. Not only the του, but the plain strokes for the alpha in a ms. of this age, and the purely tachygraphical form of the φ, are very noticeable. A single tachygraphical form, σαc, is given in the word ἐχώωσαc (the context is ἧc καὶ τὸν παῖδα ἐχώωσαc) by Vallicell. E. 55 of the xith century. Other mss. of this sort that have already been described are Clarke 12 (v. s. μέν, τε), Angelica T. 1. 8 (τα, τεc, των, τωc), Roe 16 (εν), Laud. gr. 1 (τὴν), Neapol. II. A a. 22 (τε, τωc).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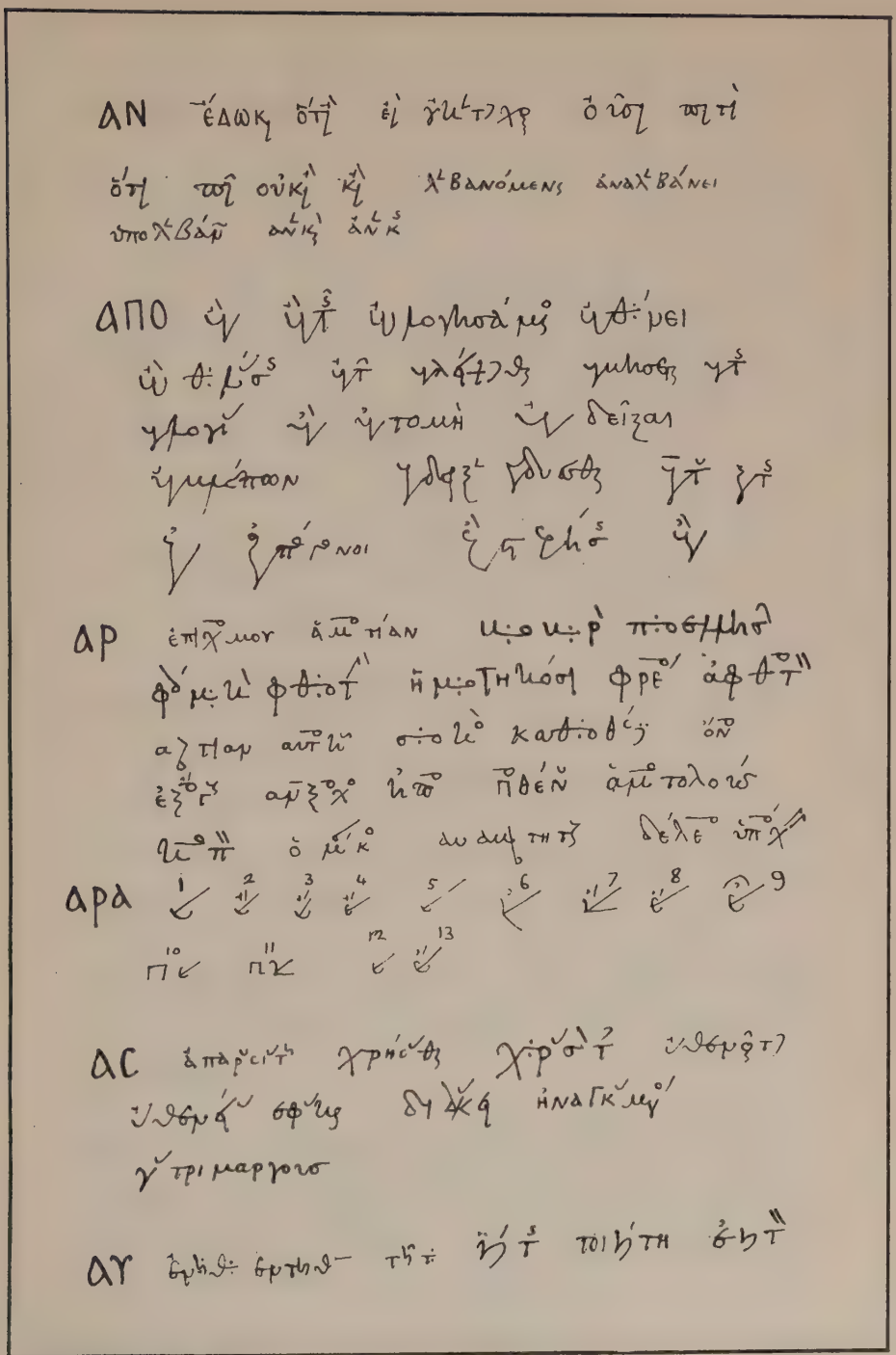

Abbreviations in Greek MSS.

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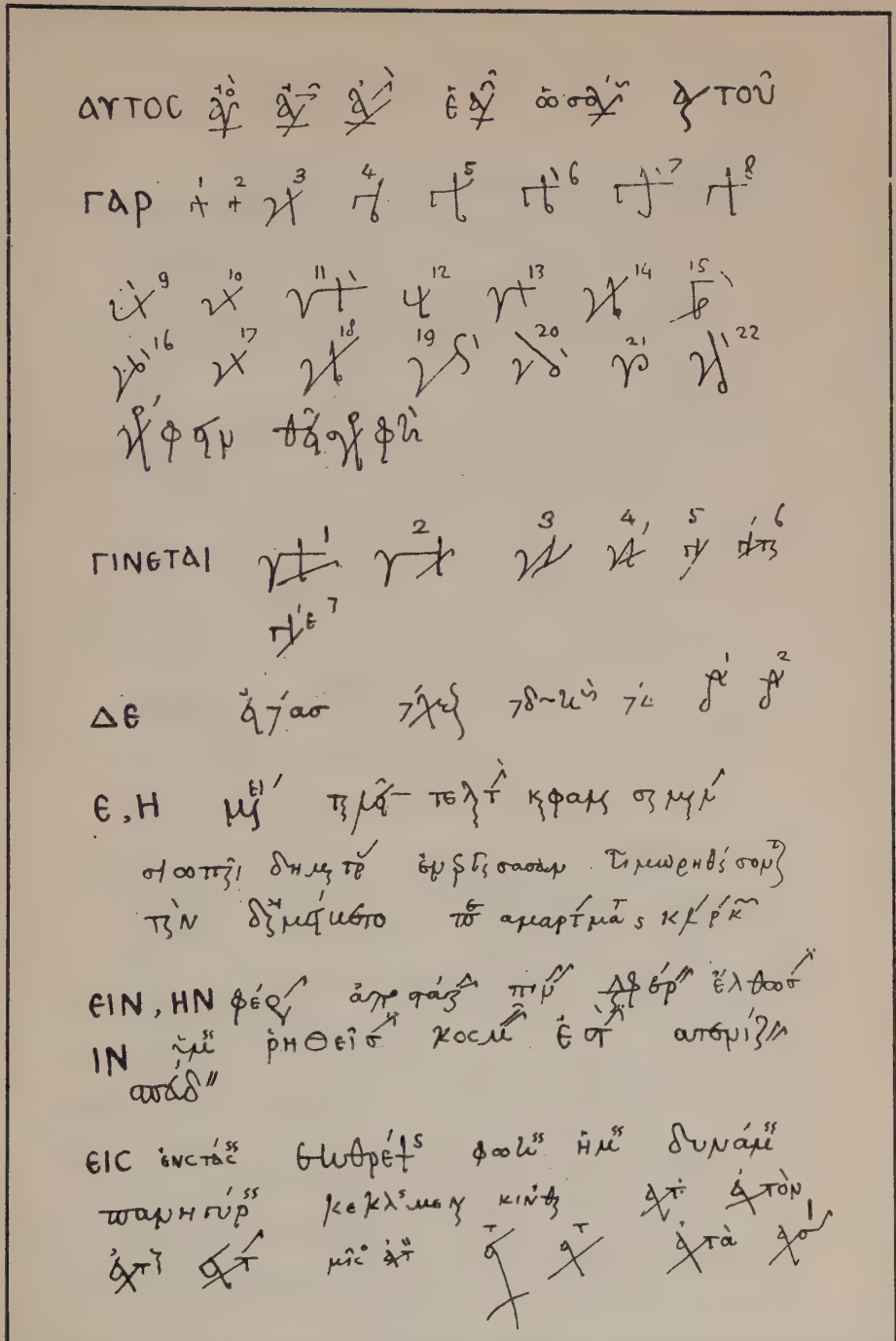
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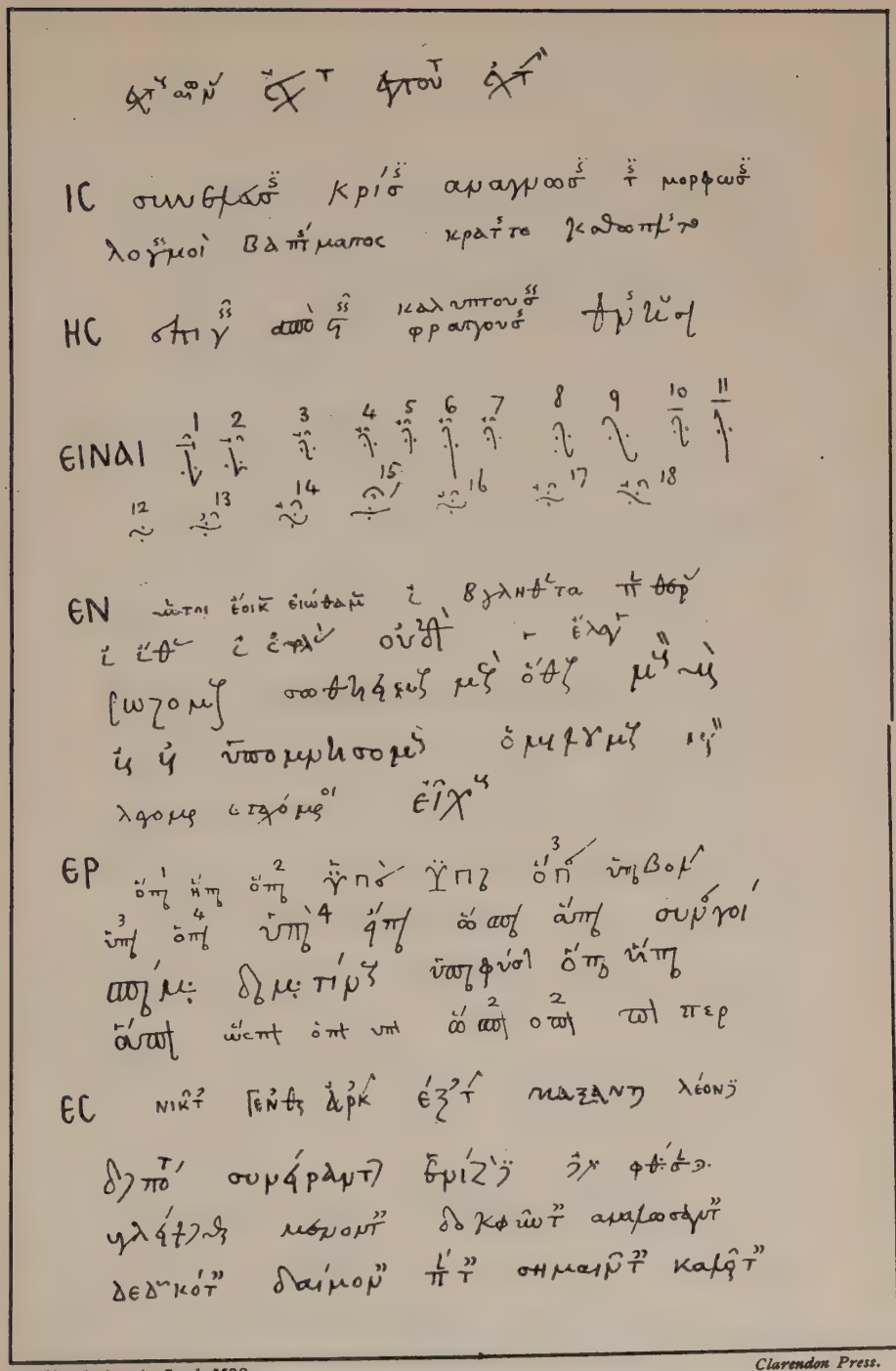

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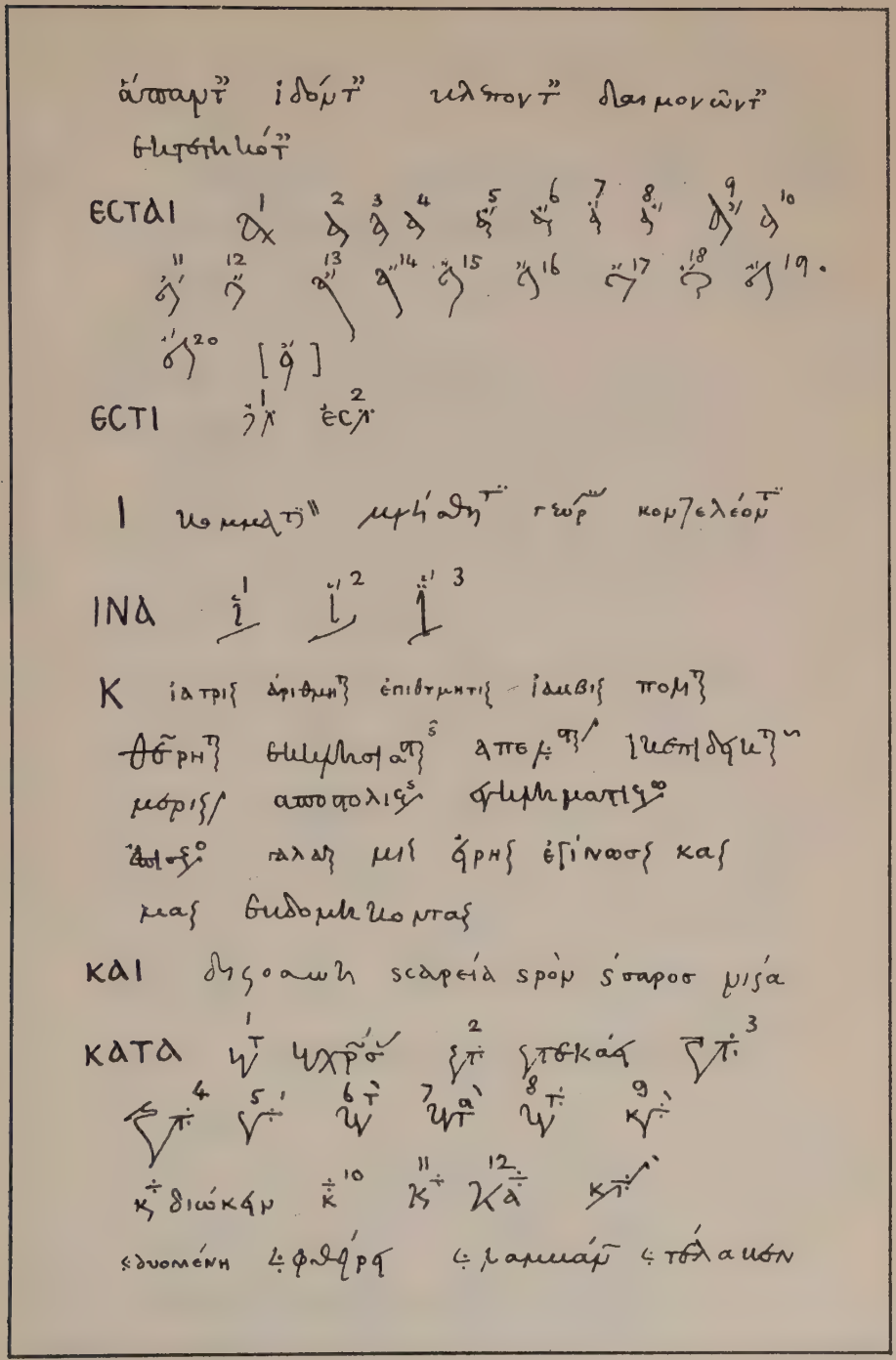

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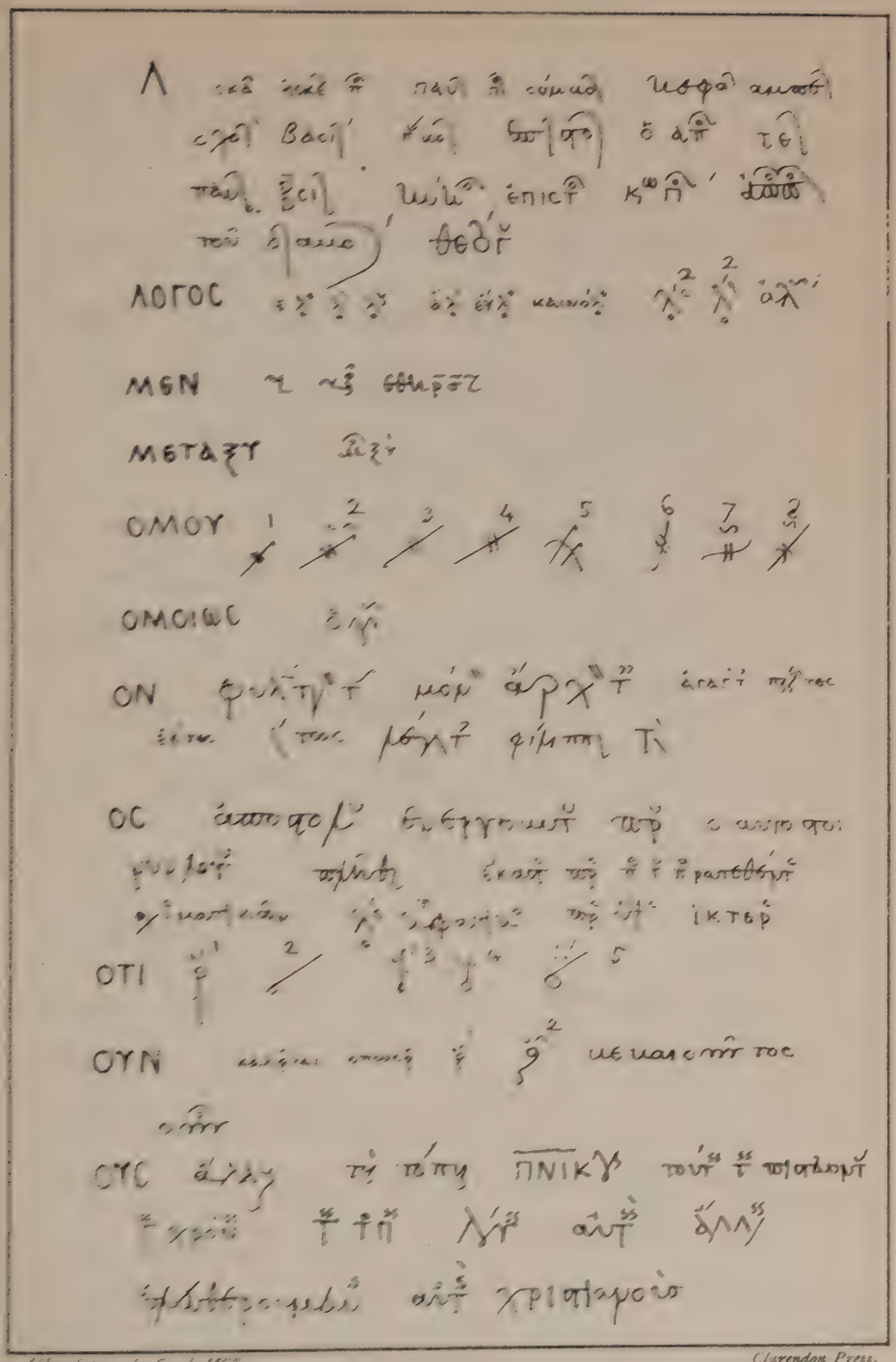
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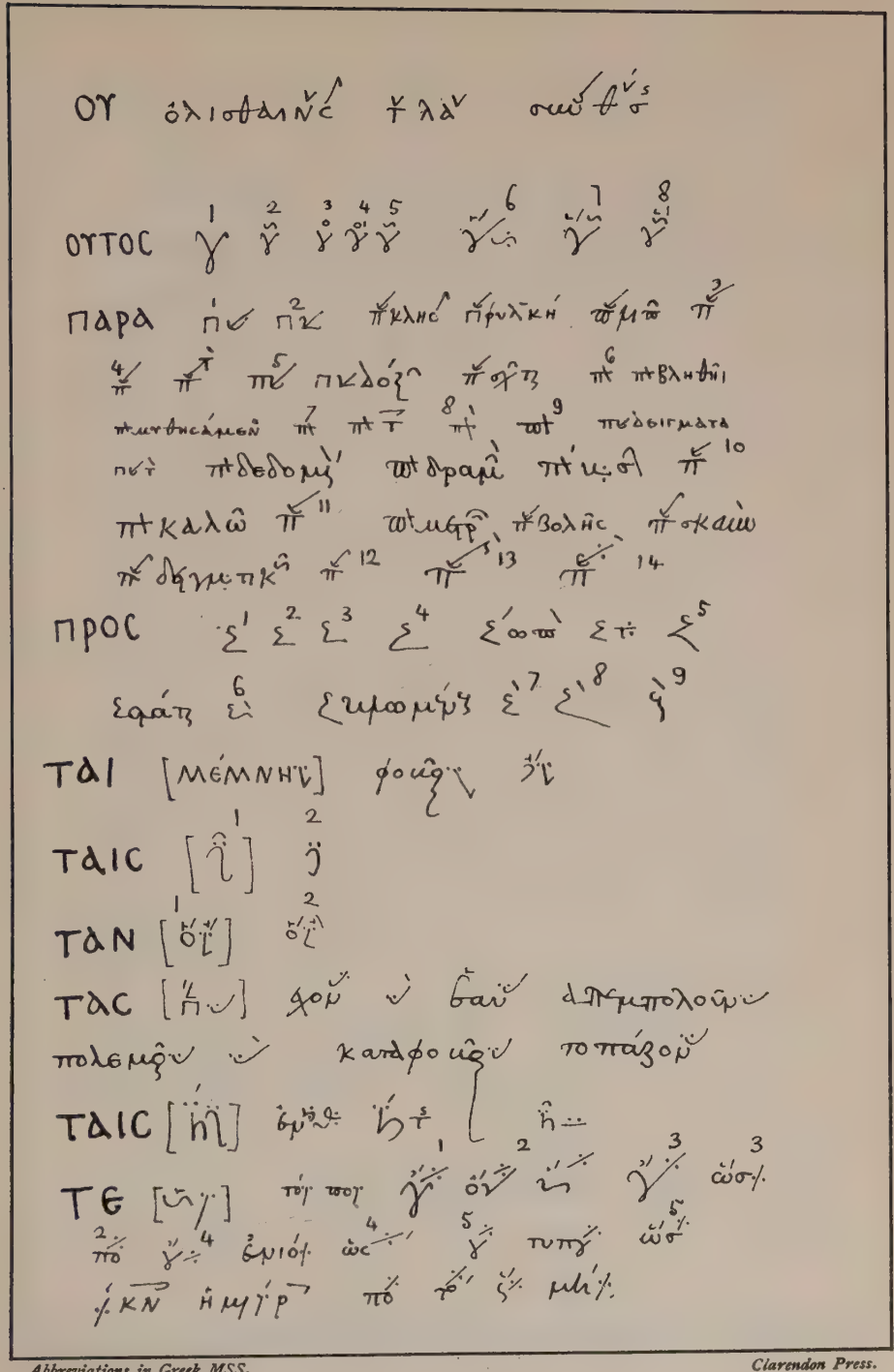

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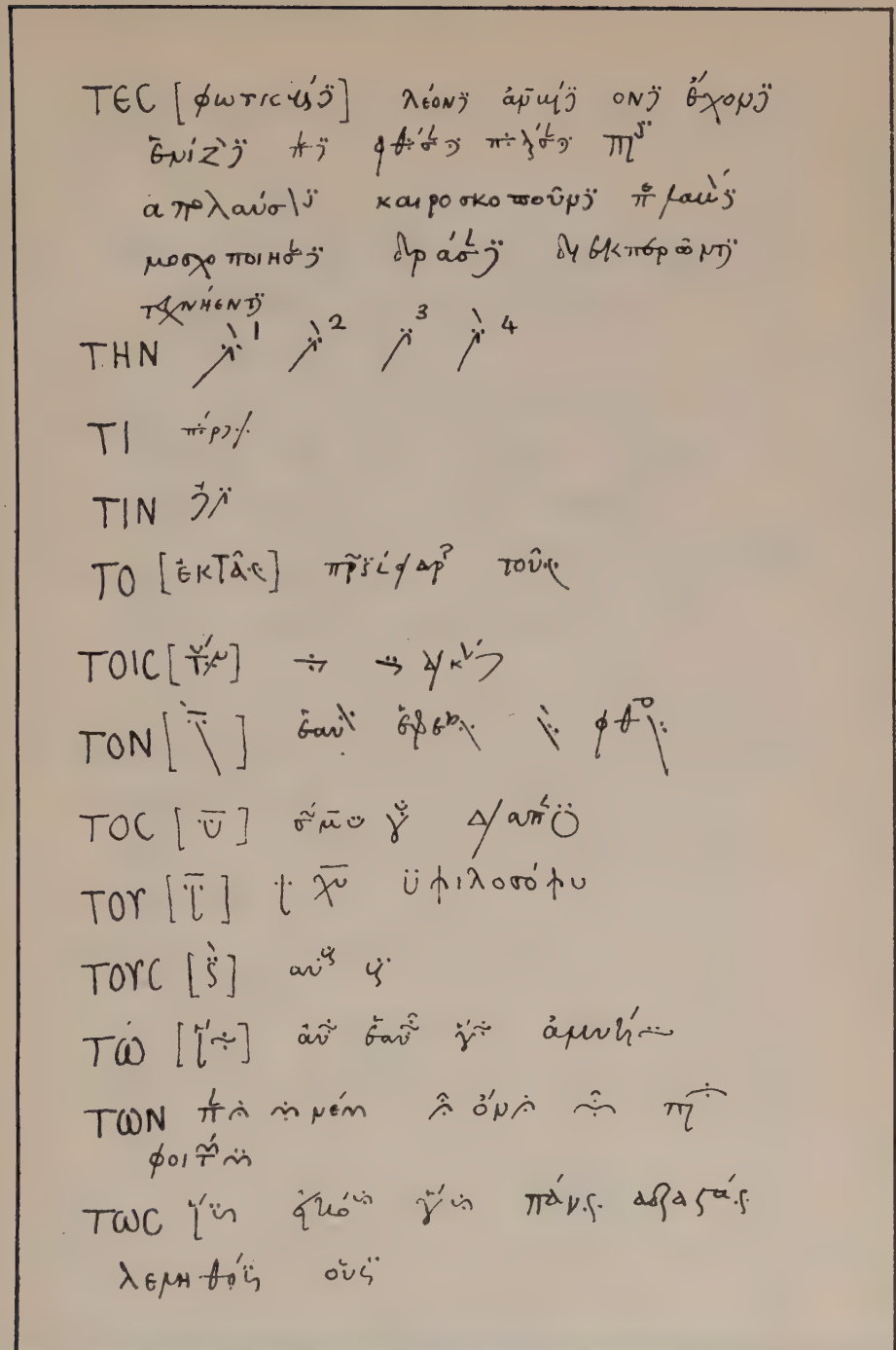
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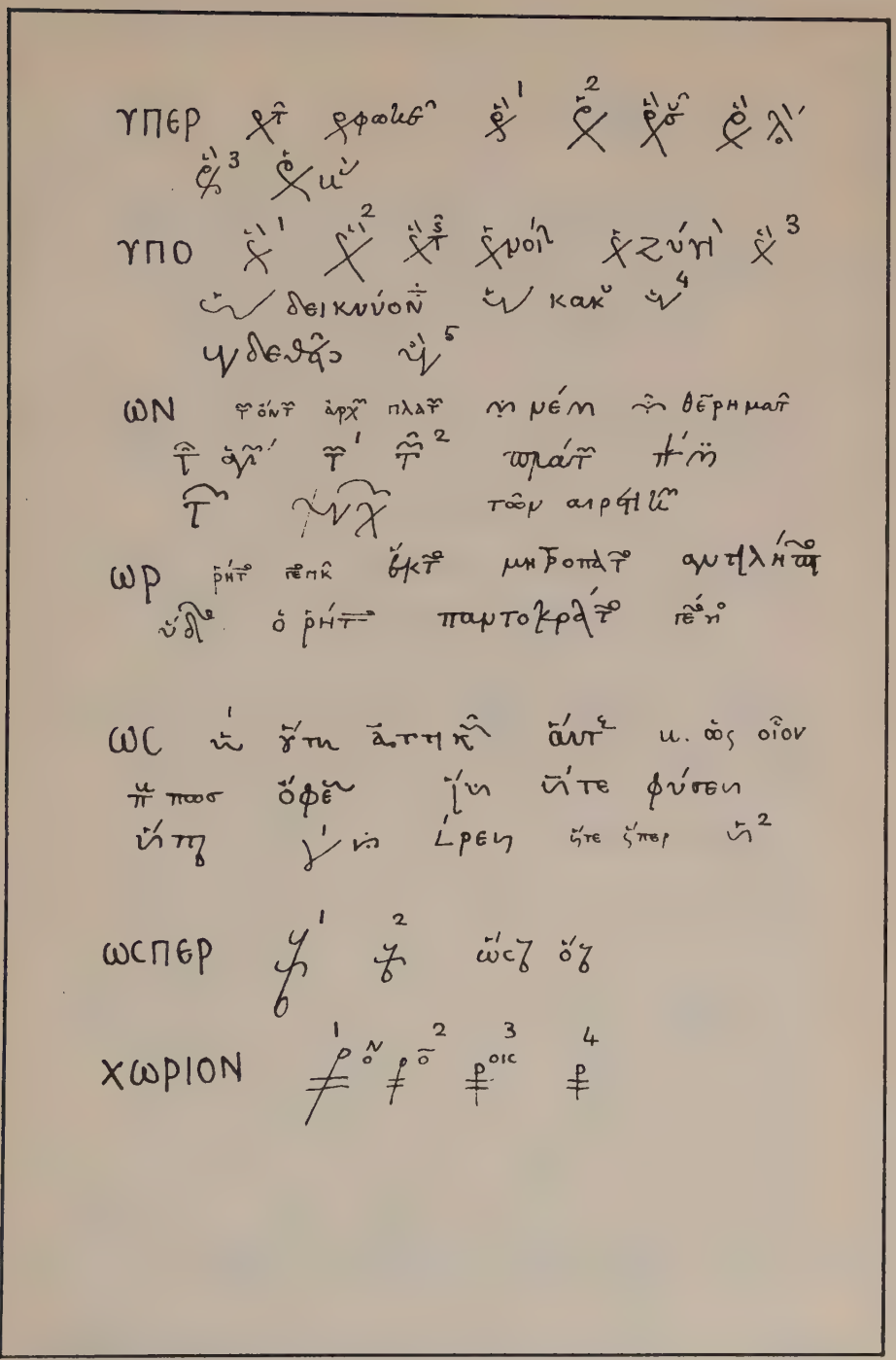
ὄνίζϊ πϊ φθόϊ πλόϊ πϊ
ἀπολαύσϊ καιροσκοπουμϊ πραΰϊ
μοσχοποιηθϊ δραάϊ δγδικηορῶντϊ
τεχνήεντϊ
THN 1 2 3 4
TI πρϊ
TIN ϊν
TO [ἐκτὰς] πῆχέ ἀρ τοῦς
TOIC [τῶν] ÷ → γκνϊ
TON [ ] ὅαν ὄφθ ἰ φθ
TOC [ῦ] σῶυ γ Δ ανθ
TOY [ῖ] ἰ χῦ ὑ φιλοσόφυ
TOYC [ὶ] αὐ γ
TΩ [ῖ ÷] ἀῶ ὅαῶ γ ἀμυθ
TΩN πὰ μέν ἃ ὁμὰ πῆ
φοιπῶν
TΩC γ ἀμό γ πάνς ασαςάς
λεμηθόϊ οὖς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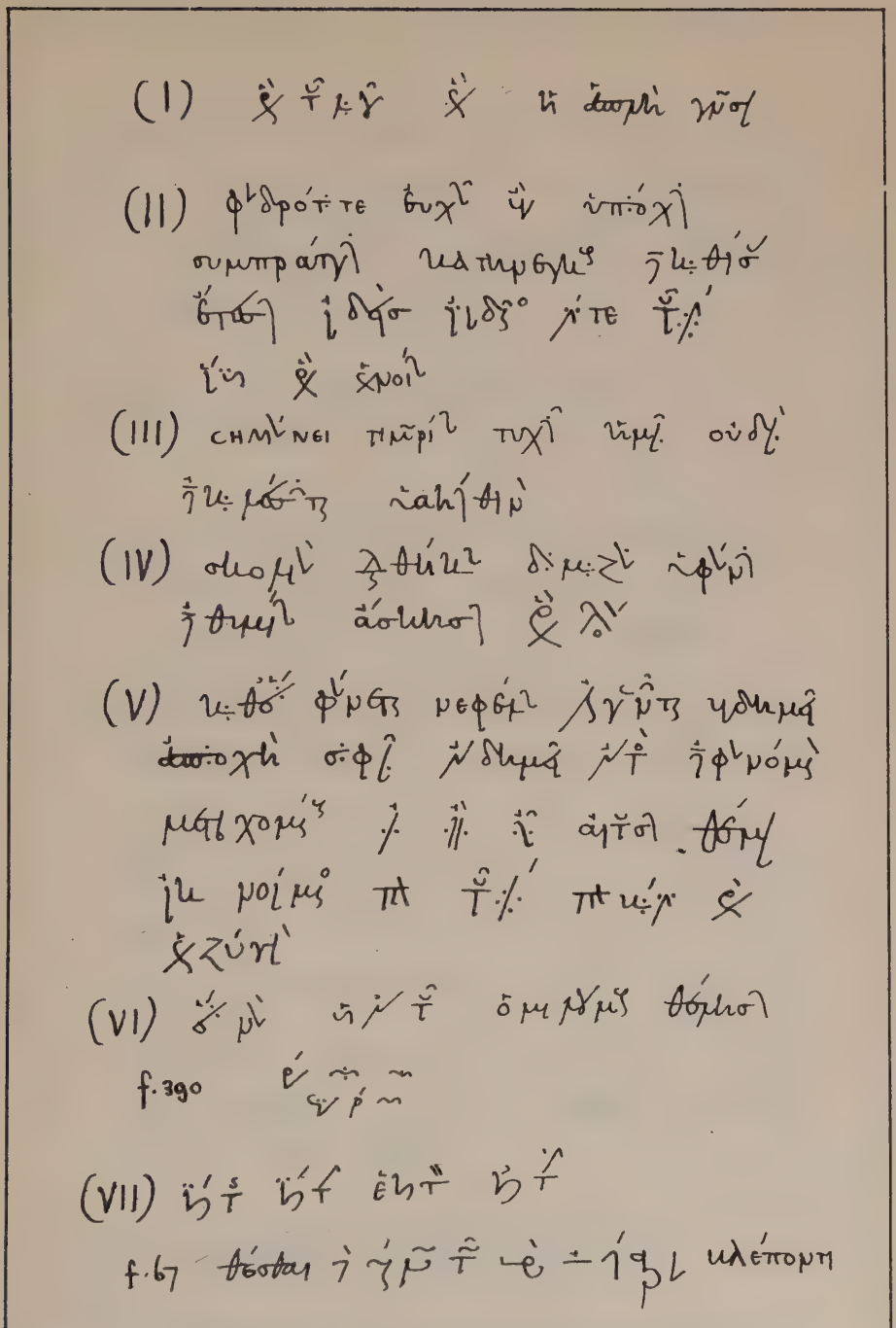

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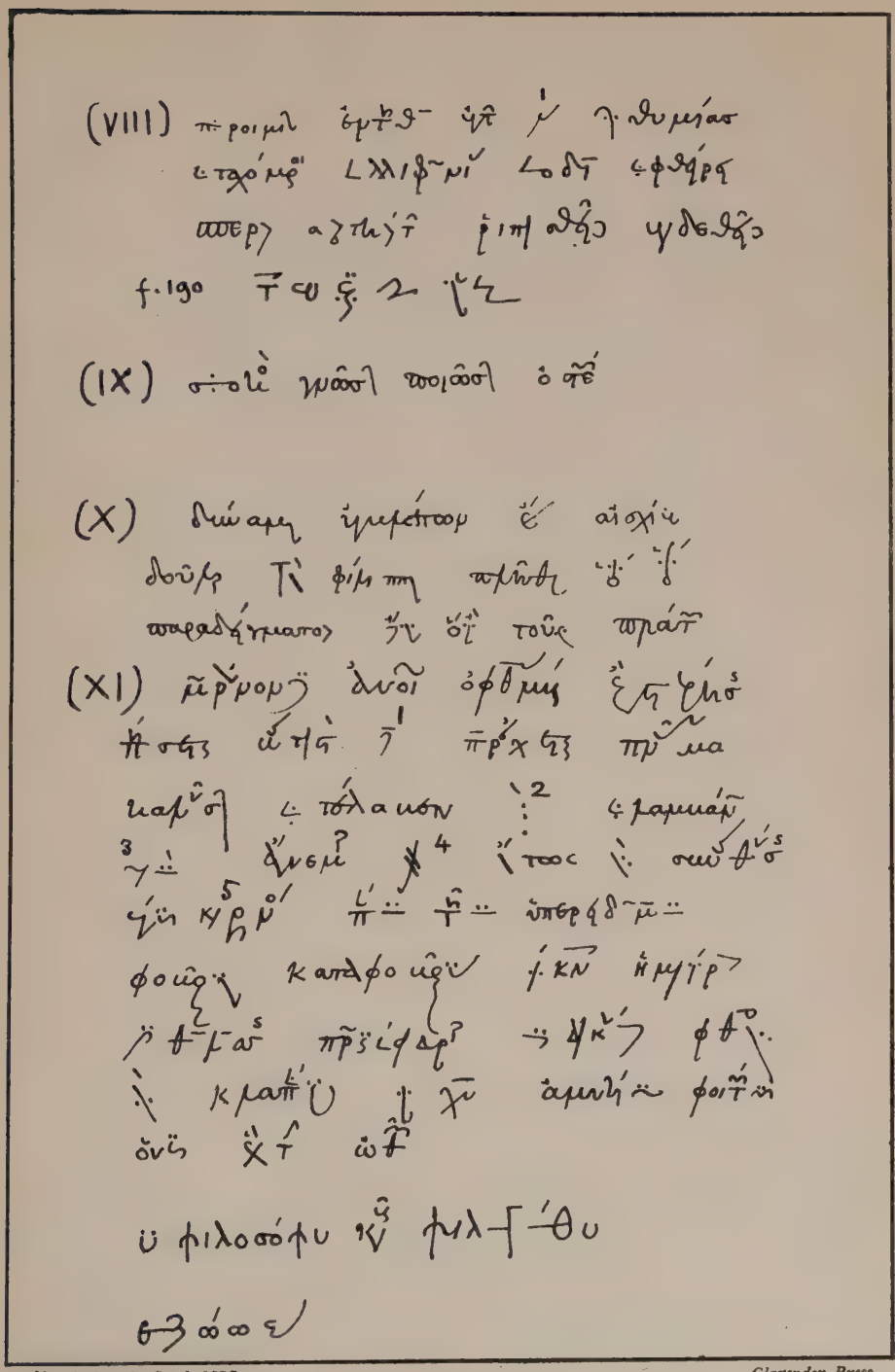

(VIII)

(IX)

(X)

(XI)

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